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How the tech decoupling impacts knowledge management for MNEs

An explorative study focusing on regulations and market measures in the US, Europe and China

Master's thesis in the Management and Economics of Innovation programme

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SUMMARY
The global business environment, with a focus on the United States, China, and Europe, is currently altering as a consequence of the tech decoupling. The change is predominantly driven by market measures and new regulations, exemplified by bans of foreign companies in local regions and restricted cross-border transfer and data processing. Consequently, there may be effects on the world economy as well as on how multinational enterprises (MNEs) collaborate internally. This study focuses on the latter, with emphasis on knowledge management due to knowledge's fundamental importance for companies to be competitive. The tech decoupling paradigm is contemporary with sparse research in the knowledge management field. Hence, the study aimed to explore challenges for knowledge management for MNEs using a qualitative and inductive approach based on expert interviews within the IT field from a MNE and desk research. Findings concern intensification of already discovered challenges for the company such as to deal with tacit knowledge and utilization of IT, handling the cultural complexity, and the development of new organizational structures. Furthermore, two new challenges are found: i) Localized knowledge resulting can cause new power balances, and ii) potential restrictiveness among the employees to share knowledge cross-border.

Keywords: Tech decoupling, knowledge management for multinational enterprises, data protection, globalization, data regulations

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1 Introduction

The following chapter introduces the research. First, relevant background to the researched topic is presented including an overview of the changing global market situation and the possible impact on knowledge management for multinational enterprises (MNEs). Next, the purpose of the report will be presented together with the research questions that the study aims to answer. Lastly, the limitations of the study will be presented.

1.1 Background

A new paradigm of the global business environment may arise as a new technological leader in the world is approaching. The United States' global supremacy is challenged by the intensified competition from China, who's reaching for global technology leadership (Schüller & Schüler-Zhou, 2020). Decoupling is one of the predominant effects of the tension between the two superpowers, which is unraveling globalization and steering the countries' economies and technology ecosystem away from each other (Hoecker & Wang, 2020).

Tech decoupling is a part of this and can broadly be defined as the undoing of cross-border trade in high-tech goods and services areas (Cerdeiro et al., 2021). This may affect the world economy due to the higher barriers to trade in high-tech sectors between major economic regions in a current system built on a dependency on cross-border trade for high-tech production (Cerdeiro et al., 2021). Since 2017, the acceleration of the technology decoupling increased when the US relation with China shifted from engagement to confrontation resulting in measures such as export restrictions and screening of Chinese investments (Schüller & Schüler-Zhou, 2020). In parallel, China has introduced restrictions and market measures similar to the one introduced in the US, e.g. putting pressure on Chinese companies listed in the United States' stock exchanges ("China seems intent on decoupling its companies from Western markets", 2021). From the European side, the region is partly caught in between the superpowers with a need for a clear technology policy going forward (Schüller & Schüler-Zhou, 2020). The position is not optimal for the Europe as China and the US are the regions two most important trade partners and a continued trend of geopolitical tension would cause severe consequences (Schüller & Schüler-Zhou, 2020). In addition to the market measures, regulations affecting the global collaboration has been introduced within the different regions. This includes the cybersecurity law & personal information protection law

in China, GDPR & Schrems II in Europe and California Consumer Privacy Act and the Cloud Act in the US.

Inherently of the tech decoupling and the changing business environment, companies have to revisit their global strategy. The tech decoupling is reversing the last decades of centralization and globalization with potential effects for global collaborations. For example, regulations certainly affect the flow of selected data and information, but the further results are unknown. Global knowledge management is one of the areas where cross-border disruption could influence. Knowledge is key for companies to gain and keep their competitive advantage (Zack, 1999), hence it is of high relevance to understand if new challenges on how MNE managing knowledge in a more decoupled world emerges. There are studies analyzing knowledge management challenges for global business (e.g. Kalkan, 2008) and a study assessing the knowledge flow to localized entities for multinational corporations (e.g. Gupta & Govindarajan, 2000). However, no research has been found exploring the effects of the last years tech decoupling on the management of knowledge, creating a gap in the academical literature.

1.2 Purpose & research question

The purpose of this thesis is to fill the above-mentioned research gaps. It's for this reason important to understand the effects of the market and regulatory development changing the global business environment where MNEs manage their knowledge. This is done by exploring and conceptualizing the potentially emerging challenges for MNEs regarding knowledge management by investigating the following research question: *How could the tech decoupling affect the knowledge management for multinational enterprises in terms of new challenges and intensification of existing ones?*

1.3 Scope & limitations

The study aims to cover a contemporary state of the external and internal environment multinational businesses are operating in followed by its effects on knowledge management. Emphasis is put on the changing global context focusing on the United States, Europe, and China. The study covers an overview of recent market actions, newly introduced regulations, prominent case examples, and expert insights from one multinational enterprise with headquarter in Europe. Data and IT-related topics are focal in this study, as these topics are

anticipated to be impacted by many of the newly introduced regulations and market measures. The years studied for the external market are between 2017 and 2021.

The study has some limiting factors. Firstly, the empirical data generated from the interviews are sourced only from one multinational enterprise with headquarter in the Europe. As there are different set-ups for multinational enterprises, the findings could have limited generalizability. Moreover, different challenges can be experienced for MNEs with headquarter either in China and the US. Secondly, all interviewees operate in a function related to either IT and data, leading to a limitation as only these functions are included. Some interviews also contain company sensitive information which has been excluded from the report. Thirdly, the contemporary characteristics of the study comes with limitations. The tech decoupling between mainly the US and China started mainly in the year 2017 and it is still an ongoing paradigm. Consequently, the amount of academic literature in the area is spare, especially with a focus on knowledge management in a tech decoupled world. Further, full exhaustiveness of the market measures and regulations has not been achieved. Although the goal of being fully objective, the selection process of what to include leaves room for biases. Lastly, the complex context affects the depth of the study's findings and its anchor in theory, as the investigated situation touches upon several study fields such as political sciences, organizational theory, and international business.

2 Context & Theoretical Framework

2.1 Context

This section starts with explaining the tech decoupling and the current state of the global market . Thereafter, deep dives are made in the field of new regulations in the US, Europe, and China and market measures from the US and China to depict the context further.

2.1.1 Tech decoupling

The tension between the US and China has accelerated the disentangling of globalization with a course likely not to change (Hoecker & Wang, 2020). As further stated by the consultancy firm Bain & Company through Hoecker & Wang (2020), means of the conflict can be found in different areas of the society; companies are put on an entity or watch list, threats of new tariffs, embassy closures, changes in Hong Kong's sovereign status, US executive' orders to ban Chinese network equipment and social apps. The effects of the tech decoupling may as well affect areas such as intellectual property protection, data privacy, and national security in addition to new industrial policy assessment (Cerdeiro et al., 2021). Cerdeiro et al. (2021) further concluded in an economical assessment that decoupling is in general associated with high costs for the main involved technology hubs. China is particularly exposed to the high cost of decoupling, closely followed by the United States and European technology hubs such as Germany.

Hoecker & Wang (2020) depicted three possible scenarios for the development of global set-up, namely globalization, slowbalization, and decoupled. The current state is globalization although moving towards slowbalization, and decoupled. Each of the scenarios described is associated with different consequences for the supply chains and intellectual property, described as followed (Hoecker & Wang, 2020) starting with the supply chains: In globalization state, there are limited tariffs and the global supply consists with low IP protection. The slowbalization is related with modest tariffs in specific segments and slowing the global demand. Additionally, cybersecurity concerns and nationalism affect purchasing. Global supply continues in general for selected sectors in the slowbalization state. In the decoupled scenario, significant tariffs and sanctions are introduced, and cybersecurity concerns and nationalism steer the purchasing. Further, two global trade blocks emerge with collaboration either with China or the US. From the intellectual property perspective, in the globalized scenario, the IP flow within MNEs has sparse interventions from the US. In the

slowbalization scenario, the US is said to intervene more in the tech transfers and with a limitation of sharing IP with China. In the decoupled scenario, the US forbids IP sharing with China.

From the political side, both China and the United States have announced the focus area for the approaching years with goal to build up the national capabilities. China has its "5 years agenda" starting 2021, and the US with the new 2021 US president's trade agenda. The objectives for the coming years of China & the US are summarized in the following quotes:

CHINA'S 5 YEARS AGENDA:
With Chinas newly introduced 5 years agenda, the country aims to lift its economic, technological and national strength to a new higher stage. ("China's 5-year plan to lead global recovery", 2021). Substantial focus is stated to be put on improving the domestic position regarding economic, technical innovation and national security ("China's 5-year plan to lead global recovery", 2021).

2021 US PRESIDENT'S TRADE AGENDA:
The 2021 US president's trade agenda from the Biden Administration also have content enforcing the tech and trade decoupling (Office of the United States Trade Representative, 2021). In the agenda, China is recognized with unfair trade practices harming American workers, threaten the US's technological edge, weakens their supply chain resiliency and undermine the American national interest. The seriousness of the agenda can be understood from the following quote: "The Biden Administration is committed to using all available tools to take on the range of China's unfair trade practices that continue to harm U.S. workers and businesses." (Office of the United States Trade Representative, 2021).

2.1.2 Regulations in China, Europe and the US

During the last years, numerous new regulations about data privacy and cyber security have been introduced in the US, Europe, and China. In this section, important regulations will be covered.

Regulations in China

The last years China has introduced several new laws regulating the data privacy and cybersecurity. The cybersecurity law, the data security law and the personal information protection law are covered.

Cybersecurity law

Cybersecurity law, hereafter CSL, came into effect on the 1st of June 2017 (Asma, 2020). The purpose of the law is to protect national security and the citizens of the country. Specified in the law, are several restrictions on how data is allowed to be transferred to and from China. This is applicable for all foreign companies with facilities in China as well as companies doing business with Chinese companies (Asma, 2020). The law also gives the Chinese government allowance to view and store all personal data and confidential information sent to or originating in China (Asma, 2020).

To transfer any data from China, companies must request a permit from the Chinese Cyberspace Administration (CCA) before transferal (Asma, 2020). Further, Data transfers have to be documented regularly and notified to the CCA annually. By not adhering to the conditions, companies risk restrictions or bans imposed on future data transfers (Asma, 2020).

Data Security law

The Data security law, hereafter DSL, came in effect from the 1st of September 2021 and regulates the usage, collection, and protection of data in China (Chen, 2021). The data security law sets a framework and authorizes the Chinese authorities to release industry-specific regulations. The Auto Data Regulation is one the industry-specific regulations, categorizing types of vehicle data and defining the requirements for the processing of data collected by a vehicle (Fusheng, 2021). A security assessment has to be performed to transfer data cross-border, governed by the CSL (Chen, 2021).

The consequences of not adhering to the data security law spans from penalty fines for the company and responsible IT manager to bans of the business license in China (Chen, 2021). The law is applicable for any organization or individual processing data; hence it will be a change many are required to adhere to (Chen, 2021).

Personal information protection law of the people's republic of China

Personal information protection law, hereafter PIPL, is China's first law specifically regulating the protection of personal information and rights of individuals and data privacy compliance of enterprises, with effect from the 1st of November 2021 (You & Jin, 2021). PIPL is stating new rules for personal information processing activities which companies active within the territory of the People's Republic of China have to follow. In addition to the restrictions of processing and transferring data, PIPL also enforces a general need for companies to ask for individuals' consent of letting their data being processed (You & Jin, 2021).

Especially relevant for multinational enterprises, PIPL does provide a new requirement for cross-border data flows of personal information (You & Jin). To be able to send cross-border personal information, the transfer must pass a security assessment controlled by the cyberspace administration of China ("CAC") and follow their standards. The person whose data is transferred must also be informed about the content of the transferal (You & Jin). Additionally, personal information collected in China is required to be stored just in China.

Regulations in EU

Relevant regulations in the EU regarding data and security explored are the General Data Protection Regulation, including Schrems II, as well as Network and Information Security.

The General Data Protection Regulation (GDPR)

The General Data Protection Regulation (GDPR) is an EU regulation, with effect from 2018, about the protection of persons privacy concerning data processing of personal data and the free movement of such (European Commission, n.d.). GDPR does apply for all data regarding EU citizens or residents, and offered goods or services to these, i.e. to be located in the EU is not a prerequisite for the law to be valid (Wolford, 2019). The regulation is essentially a fundamental step to increase the rights of individuals in the digital era, as well as clarifying rules for companies and public bodies for the digital market (European Commission, n.d.). Juridical persons not adhering to the regulations, face penalties reaching up to €20 million or 4% of their global revenue (Wolford, 2019).

Schrems II

Schrems II is a judgment (C-311/18) from the European Court of Justice (ECJ) which clarifies that personal data within the scope of the GDPR may only be transferred outside the European Economic Area (EEA) if the level of protection is essentially equivalent to the EU (*C-311/18 - Facebook Ireland and Schrems*, 2021). For the USA, the Schrems II argued that an adequate level of data protection was not achieved due to the extensive surveillance activities by intelligence services (Ooijevaar & Wilkinson, 2020).

The Network and Information Security Directive (NIS)

The Network and Information Security (NIS) Directive is the first EU-wide legislation on cybersecurity aiming to achieve a high common level of cybersecurity across the Member States (Negreiro, 2021). To strengthen the security requirements, security of supply chains, align reporting obligations, and more strict supervisory measures and enforcements policies, the EU has now proposed an expansion of NIS by the NIS2. This obliges more actors across different sectors to increase cybersecurity in Europe. The expansion of the regulations has been assigned to the Committee on Industry, research and Energy within the European parliament, and is expected to enter Trilogue negotiations as the next step. (Negreiro, 2021).

Regulations in the US

Relevant regulations in the US regarding data privacy and security further explored are the California Consumer Privacy Act and the Cloud Act.

California Consumer Privacy Act

The California Consumer Privacy Act (CCPA) was released in 2018 and is a regulation giving consumers more control over the personal information that businesses collect (State of California Department of Justice, n.d.). The regulation includes the right for persons to know which information is collected and the usages thereof, as well as deletion and op-out alternatives (State of California Department of Justice, n.d.). The CCPA is a landmark law for the new privacy rights for Californian consumers and the strongest privacy protections in the US (Klosowski, 2021). Apart from California, only Virginia, and Colorado have comprehensive consumer privacy laws in 2021. (Klosowski, 2021).

CLOUD Act

The United States have also regulations addressing data processors in third countries, similarly to GDPR in Europe. The CLOUD Act is an example thereof, regarding the transfer of electronic data (Rojszczak, 2020). The purpose of this legislation was to clarify the right of US law enforcement authorities to access electronic or physically stored data owned or controlled by US entities in foreign data centers (Rojszczak, 2020). The US congress additionally adopted frameworks for bilateral agreements with third countries avoiding problems with e.g. EU jurisdictions. The author also states that the adoption of the CLOUD Act could be an effect of the introduction of the GDPR in the EU. (Rojszczak, 2020).

2.1.3 Market measures in China and the US

In addition to regulations in the different regions, market measures have taken place predominately from the US and the Chinese side.

Chinese market measures

An example of the market action from the Chinese government causing global turbulence is the $4.4bn IPO on the New York for the ride-hailing giant Didi, ("China seems intent on decoupling its companies from Western markets", 2021). Shortly after the IPO, the Cyberspace Administration of China (CAC) launched an investigation into the company, immediately cutting 5% off the share price. This was followed by a request from the regulator that Didi's mobile app had to be withdrawn from the app store in China, restricting the new user to join the platform. The reason behind was claims that Didi was illegally collecting and using personal data. These actions are reducing both Chinese firms' interest for foreign listings as well as foreign investors to buy Chinese stocks ("China seems intent on decoupling its companies from Western markets", 2021). Notably, there are around 400 Chinese companies listed in the US today, accounting for approximately twice the number since 2016, with the combined stock value from 400bn to 1.7trn ("China seems intent on decoupling its companies from Western markets", 2021). Hence, measures affecting this balance could have an immense effect on the global economy. One of the biggest hurdles for China's progression is said to be due to the halting in the technical development emerging from the government "attacks" on the biggest china tech companies such as Didi and Alibaba (Pei, 2021).

Another measure taking place in China is the ‘Great Firewall’ disrupting the use of global social media providers, exemplified by bans on the American-founded Facebook, Twitter, and Google (Zucchi, 2021). According to Zucchi (2021), the content on the internet is controlled by the Chinese government, and information not in the interest of the government is removed. An effect of the restrictions of global providers is the flourishment of domestic companies with similar services (Zucchi, 2021).

American market measures

To curb China’s rise, the US adopted a strategy with “economic decoupling” and “tech war”. Global supply chains are consequently forced to relocate out from China in addition to disruption of the flow of high-end technologies and know-how to China (Pei, 2021). The handling of Huawei statutes a good example of how American political measures slowed the development of at the time leader in 5G technology (Pei, 2021). The measure thereof was e.g. banning US companies from collaborating or purchasing telecommunications equipment from companies deemed a national security risk including Huawei (Gartenberg, 2020) and the prevention of Huawei to adopt US-based tech for semiconductor chips in May 2020 (Schüller & Schüler-Zhou, 2020). Hence, a major disruption of the technology supply chain between the two countries took place. Non-Chinese companies are concerned to use Chinese made communication-equipment and the distancing from Huawei was driven by fear of losing company secrets as an effect of the vulnerabilities arising from digitalization (Saïd Business School, University of Oxford, 2021). The number of Chinese companies listed for sanctions in the United has in general increased dramatically in the last years (“Joe Biden is determined that China should not displace America”, 2021).

Additional measures taken by the United States to contain China’s technological rise can be seen in the screening of Chinese investment in the US, new export restrictions, and limiting knowledge transfer to China (Schüller & Schüler-Zhou, 2020). A reduction in export from the US to China between 2018 and 2019 is seen, as well as a longer declining trend in the export of Information and communications since 2015 (Schüller & Schüler-Zhou, 2020).

The American side is also actively scrutinizing cross-border collaborations ("China seems intent on decoupling its companies from Western markets," 2021). In December (2020), it’s explained that the US congress passed a law requiring Chinese companies listed in America to submit auditing documents to an oversight body. Simultaneously, Chinese regulators do not

permit Chinese companies to disclose and declare these documents as it could be Chinese state secrets involved ("China seems intent on decoupling its companies from Western markets," 2021). As an effect, delisting of Chinese companies from the American stock exchanges might take place.

2.2 Knowledge management

This section covers the definition of knowledge management and its relevance as well as associated challenges in knowledge flows and management for global businesses.

2.2.1 Introduction of knowledge management

Knowledge management is a field of study on how to manage knowledge practically and effectively to facilitate the reach of broad operational and strategic objectives (Despres & Chauvel, 2000). This can range from programs, policies, communication, and practices (Wiig, 2000). Knowledge is firms' most strategically important resource and is a foundation for competitive advances, hence a firm's capability to acquire, internalize, store, share and apply knowledge becomes the most important skill to build and sustain (Zack, 1999). One of the foremen for the embodiment of knowledge management in the 90s, L. Prusak, is calling the field of knowledge management response to social and economic trends, naming globalization, ubiquitous computing, and knowledge-centric view of the firm as three of these (Prusak, 2001). Further drivers for the emergence of knowledge management come from the increasingly competitive landscape resulting from globalization and internationalization as well as more sophisticated customers, competitors, and suppliers (Despres & Chauvel, 2000). Also stated by the authors, is that the increase of knowledge management capabilities can mitigate internal bottlenecks and raise the technological capabilities.

To understand knowledge management completely, it is relevant to distinguish between data, information, and knowledge. Data can be seen as a representation of facts or observations without context, being the foundations of constructs of higher orders (Bender and Fish, 2000). Information is described to be the next step of the knowledge hierarchy and consists of data with additional added meaning, purpose and relevance. Knowledge is a constructed form of information incorporated with personal experience, which is more easily converted to action (Wiig, 1993). Knowledge is can also be said to be a state of information that is organized, set

up with a set of rules, processes, and operations based on experience and practice (Kalkan, 2008).

In enterprises, there are two prominent purposes for knowledge and intellectual capital: 1) it is a vital resource for effective functioning and 2) and it creates valuable assets for sale or exchange (Despres & Chauvel, 2000). The general scope of knowledge management can differ widely, ranging from how to use technology to capture, manipulate, and locate knowledge, knowledge-related information management, knowledge utilization to improve the enterprise's operational and overall effectiveness (Despres & Chauvel, 2000). In this report, the focus will be on the broad definition of knowledge with a practical focus directly aimed at supporting the enterprise's ultimate strategic objectives.

2.2.2 Importance of knowledge management in MNE

Multinational corporations exist because of their superior ability to transfer and use knowledge more efficiently and effectively compared to existing market mechanisms (Gupta & Govindarajan, 2000). According to Gupta & Govindarajan (2000), the markets have two major faults to transfer knowledge effectively; (i) specialized knowledges exists in firms in a tacit state, i.e. an human and professional based knowledge not easily transfered, and (ii) transfers of knowledge in market settings are often associated with negative externalities such as benefitting competitors as well as or state/authority involvement.

Almedia, Song & Grant (2002) also concluded after an analysis of patent citations by semiconductor companies that multinational firms are superior to both alliances and markets in cross-border knowledge building. Reasons for this stem from MNEs' capability to use multiple mechanisms of knowledge transfer flexibility and the skill to handle technical knowledge flow efficiently. Almedia, Song & Grant (2002) also state that knowledge management for multinational corporations is more than the creation of an international information system, but does also include organizational structures, systems, and cultures supporting how to exchange knowledge.

2.2.3 Framework for knowledge management for MNE

The framework to assess the knowledge management for multinational enterprises is consists of two parts: 1) fundamental factors for transferal of knowledge within multinational

enterprises, and 2) a mapping of discovered knowledge management challenges for global multinational enterprises.

Fundamental factors for transferal of knowledge within MNE

There are different ways knowledge can be transferred to new regions. The challenge of managing knowledge is both about the transferal as well as about how the transferred knowledge is further developed within the recipient's existing knowledge, i.e. knowledge building (Almedia, Song & Grant, 2002).

Gupta & Govindarajan (2000) investigated the transfer of "know-how" within multinational enterprises' inter-organizational "network" of differentiated units. Following the communication theory defining elements of communication: a message, a sender, a coding scheme, a channel, transmission through the channel, a decoding scheme, a receiver, and the assignment of meaning to the decoded message, Gupta & Govindarajan (2000) argued that the knowledge transfer process requires attention to five elements for
MNE. The five factors are: (i) value of the source unit's knowledge stock, (ii) existence and richness of transmission channels, (iii) motivational disposition to acquire knowledge, (iv) absorptive capacity of the target unit, and (v) motivational disposition to share knowledge. All of the mentioned elements apart from (v) were found completely or partially significant important in Gupta & Govindarajan (2000) study. Hence, these proven four factors will be used for building a framework for this report. The factors are explained by Gupta & Govindarajan (2000) as the following:

Value of knowledge stock: Knowledge flow is not without cost and different resources have different values. Naturally, there's higher attractiveness from other units if the knowledge of more valuable character. When the knowledge stock in subsidies cannot be replicated and but still relevant for the MNE, the knowledge outflow is anticipated to be high. (Gupta & Govindarajan, 2000).

Existence and richness of transmission channels: A flow of knowledge is not possible without suitable transmission channels. Affecting factors such as properties of transmission channels as well as the richness of communications links. (Gupta & Govindarajan, 2000).

Motivational disposition to acquire knowledge: This factor consists of the "Not-Invented-Here" syndrome leading to an ego-defense mechanism and power struggles within the organization. Consequently, managers can reduce the inflow of information as a countermeasure to remain competitive within the company compared to other peer units. (Gupta & Govindarajan, 2000).

Absorptive capacity of the target unit: Individuals differ in their capabilities to absorb knowledge even given a similar environment and premises. This can further be divided into prior related knowledge within the sending unit. The former affects the information filter and internalization process whereas the latter is about a common ground in beliefs and educations for perceiving the information similarly. (Gupta & Govindarajan, 2000).

Additional to the mentioned knowledge flow elements, Bender and Fish (2000) are stating the importance of transferring people, i.e. expats, for successful knowledge and expertise sharing apart from the normally mentioned information technology and communication systems (Bender and Fish, 2000).

Knowledge management challenges for MNEs

Due to the global environment and the fact that information is not created and understood equally in organizations (Prusak, 2001), MNEs face challenges managing the knowledge. Kalkan (2008) has created a conceptual framework on six challenges that MNEs are facing regarding knowledge management:

The first challenge concerns the organizational development of a working definition of knowledge. Businesses need to be aware of the difference between data and information compared to knowledge. Knowledge should be handled differently compared to the former two, enabling the optimization of the knowledge resource. Hence, organizations should not substitute data and IT programs for knowledge management initiatives but have different processes (Kalkan, 2008).

The second challenge is dealing with tacit knowledge and the utilization of IT. It stresses that knowledge in the usual case is tacit knowledge and thus difficult to articulate between different contexts. The author state that organizations seem to be reluctant to deal with tacit

knowledge, although the awareness of the importance thereof. IT systems should be a cornerstone and integrated component in the knowledge management process and help access knowledge resources. (Kalkan, 2008).

The third challenge Kalkan (2008) is mentioning is the adaption to cultural complexity, describing the complex cultural situation global corporations experience causing both managerial and organizational challenges. Companies need to avoid that knowledge hoarding gatekeepers are developed within different regions and instead encourage knowledge creation and sharing.

Attention to human resources is the fourth challenge for knowledge management for global companies. This is linked to the need for motivated employees actively contributing to knowledge sharing, which in turn is dependent on the human resource departments' capabilities to recruit suitable personnel as well as encouraging the culture of sharing (Kalkan, 2008).

The fifth challenge is the development of new organizational structures. Kalkan, (2008) states that hierarchical-bureaucratic structures are considered to prevent sharing and utilization of knowledge, although beneficial in other organizational settings. The development of a new organizational structure suitable for knowledge management must be weighted againast the business continuity and purpose of the organization.

The sixth and last challenge is coping with increased competition. Worldwide competition is a driving factor pushing firms to quickly respond to changes. However, knowledge management is a long-term oriented process, causing a gap between short cycle strategies and long cycled knowledge management (Kalkan, 2008).

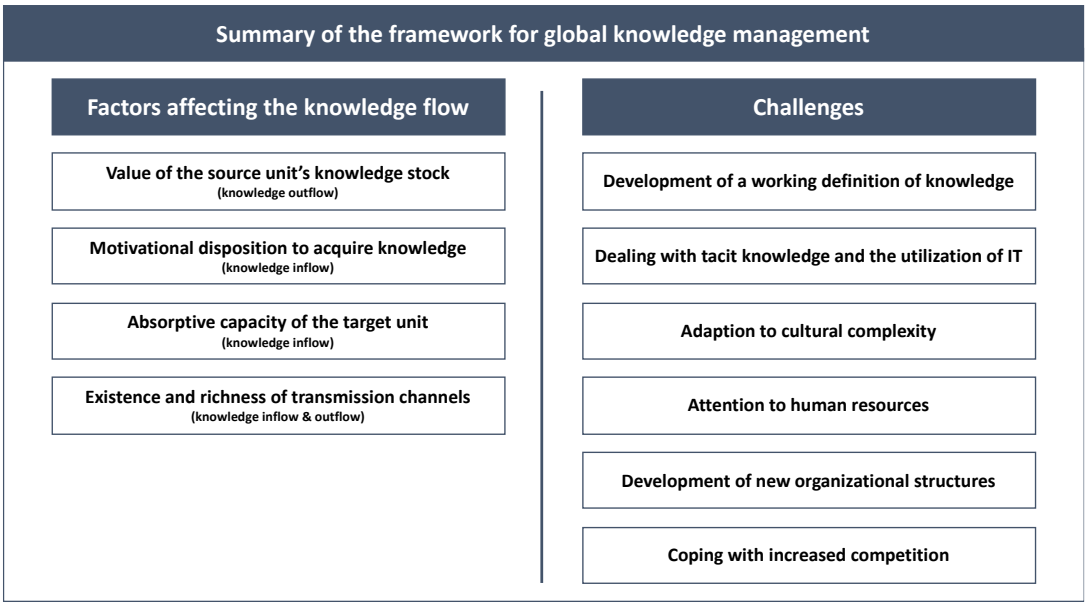

Figure 1: KM framework about challenges for MNEs (Kalkan, 2008 & Gupta & Govindarajan, 2000)

3 Methodology

The section provides an overview of the methodology by describing the study's approach to research, data collection, & data analysis.

3.1 Research approach

The context is of a volatile and dynamic character without dedicated prior research in the field of knowledge management. Therefore, the report is carried out as a qualitative study with an explorative conceptual inductive character. As Wallén (2008) mentions, qualitative studies are conducted when context and function are needed, with limited access to data. The development of the market and its effects on MNEs is uncertain, motivating the choice for a qualitative study. A qualitative method is also suitable for studies dealing with vague and ambiguous data (Maxwell, 2011), which fits this intersection of knowledge management and market development.

3.2 Data collection

The literature framework was built up using a combination of consultancies reports, news magazines, and academic literature. The amount of academic literature published about tech decoupling is sparse. Hence, a combination of consultancy reports, and news magazines was used to capture the contemporary market situation. These articles and reports were mainly found using google search engine (https://www.google.com/), together with selective research via the biggest consultancy publications. The sections on knowledge management were based using sources from two search engines: Google Scholar (https://scholar.google.com/) and Chalmers Library (http://www.lib.chalmers.se/en/search/).

The empirical data was in addition to desk research collected through six expert interviews with IT professionals from the focal MNE with headquarter in Europe. The interviews were semi-structured as it gives the interviewee freedom in answering the questions, although retaining a structure concerning the covered themes (Patel & Davidson, 2014). Four out of the six interviewees were recorded and transcribed with consent, whereas the other two recorded by note-taking. The interviewed candidates worked in an IT-related field located either in the US, Europe or China, for the same multinational enterprise. The candidates were selected based on the role specific relevance to data management and IT technology as these areas are presumed to be affected by the new global dynamics. The template for the semi-structured

interviews was created with inspiration from previous studies and their findings e.g. Kalkan (2008) & Gupta & Govindarajan (2000). The template of the interview questions can be found in Appendix A.

The research is conducted during a period from August to December of 2021. Regarding the publications concerning tech decoupling, the focus was on publications as recently published as possible as the high-speed development of the field. The relevance for contemporary publications for knowledge management was not as relevant. The search term used during the literature research is predominantly constructed by a combination of terms like: " Technology decoupling," or "technology drifting ", as well as “knowledge management” followed by “multinational enterprises” or “global businesses”.

Interviewee	**Date**	**Role**	**Location**	**Interview length**
1	26.10.2021	Manager product and technology integration & infrastructure management	China	53:20
2	26.10.2021	Enterprise architect within compliance, data and document management	USA	43:15
3	28.10.2021	Head of product integration & IT service management	Europe	51:59
4	29.10.2021	General manager architecture, innovation and technology	Europe	45:45
5	02.11.2021	Manager governance & agile collaboration	China	37:20
6	16.11.2021	Head of IT strategy	Europe	45:10

Table 1: Table of the interviewed persons including date, role, location and interview length.

3.3 Analysis of data

The first step of the data analysis consisted of thematization and structuring coherent topics from the expert interviews. The topics from the single interviews were then consolidated in the same location in then aggregated themes, enabling the transparency of multiple views on

the same theme. The location and role of the person might influence his or her opinion. Transparency of from whom each statement came from was thus important enabling the reader to self-weigh each statement. The second step of the analysis was to find relevant case examples that concretized the problem for each topic.

After finalizing all data from the result section, the empirical data was analyzed with help of the built literature framework. In this phase, the new market and organizational dynamics as an effect of the decoupling were analyzed using existing litterateur of knowledge management within MNEs. Each of the topics was then assessed, based on the found effects and the potential impact. The analysis yielded discoveries of new or more severe challenges MNEs face for efficient knowledge management.

4 Empirical results

Based on the conducted interviews with the focal multinational company, five key themes were identified: 1) Market situation, 2) Knowledge flow and creation of knowledge, 3) Organizational roles, 4) Organizational steering, and 5) Culture of sharing knowledge.

4.1 Market situation

Contemporary situation example – market situation

The market situation is already depicted in section 2.2. A further case which statue a change towards decoupling is found from the company LinkedIn. LinkedIn, the Microsoft-owned company, announced in October 2021 that it will shut down its social media service in China (Saul, 2021), although remain with solely a job-sharing website. Since 2014, the company has used a localized version of LinkedIn in China, compliant with the local regulations. However, the operating environment and compliant requirements have been getting more challenging in addition to the widespread censorship imposed by the Chinese government (Saul, 2021). Stated by Saul (2021), for these reasons the company decided to exit the country with its service. LinkedIn is following the path of American social media platforms such as Facebook, Twitter, and Youtube, exiting China (Saul, 2021). Additional cases depicting the market situation are the ban of Huawei in the US and the localization of Tesla in China.

Focal company input – Market situation

The global market dynamics have been altered and the interaction with cross-border entities has changed (interview 6). The stated reason for this is that both Europe and the Chinese government have now increased their focus on data regulations. This is for example manifested in Schrems II from the European side and the new laws in China affecting the cross-border transfer of some types of data. It's further explained that in America legislation is currently more relaxed as their focus is security rather than data protection. However, this does not mean that they adapt to stricter data protection as well.

The global market set-up will probably change even more in the future and move towards a restricted globalization situation (interview 6). The dynamics of the global situation have been going through a cycle the last two decades; everything went from decoupled to centralization, and now towards decoupling again (interview 1). This is also stated in interview 3, explaining that 15 years ago, legal entities were all local and operated locally. There was then a

centralization of the organization, follow with a current trend toward a partly localization again.

The current situation in China after the new regulations is described by interview 1. China will not close the gates from the world, as they cannot be closed. If China were to close its doors, plenty of companies would not produce and participate in their market (interview 3). Notable about the Chinese market is that China has a different culture regarding governance about the citizens (interview 1). The social credit system and the strict Covid-19 governance are good examples of how China rules the country in a more controlled way compared to the US/EU (interview 1). An additional contemporary observation in the Chinese market is the potentially precautionary action of seeking certification and transferring/securing important data before trading terms potentially get even stricter (interview 5). In a future scenario, China could be a market more focused on standards, were owners of the standard gain more market power due to the increased intellectual property rights as an effect of the standardization (interview 5).

From the trade block perspective, Germany is said to be a neutral zone between the US and China in terms of regional tension (interviews 2 & 3). The organization is trying to be compliant with the laws in China and keeping a good relationship with the Chinese government (Interview 1). One means to do, is to be transparent with different processes and data processes (interview 3).

4.2 Organizational Steering

Contemporary situation example – organizational setting

Technological companies have for years struggled with the question of localization in China. A reoccurring question is whether an international company should partner with a local business to secure access to the Chinese market, despite the requirement of purchasing from domestic companies (Hoecker & Wang, 2020). An example where an American company is partly localizing is Tesla. Reported in May 2021, Tesla will establish a data center locally in China for processing and storing information generated by its vehicles in the country as an effect after the Chinese authorities pressured the American company due to fear of spying (Vincent, 2021). This is a further effect of a previous measure in March 2021, when Tesla's cars were restricted for use in China for military personnel and employees from the key- state-

owned companies due to data security concerns risking national security (Zhai & Kubota, 2021). The risks arise from the vehicle's systems (e.g. camera) generating data of when, how, and where the vehicles operate. In addition, data is collected from the synchronization of mobile phones with cars. The Chinese authorities were already then concerned that the collected data could be exported back to the US (Zhai & Kubota, 2021).

Focal company input - organizational setting

Based on the conducted interview with the focal multinational enterprise, there is an ongoing process of localization of some systems in China (Interview 6, Interview 1). This is an effect of the changing regulatory environment regarding data handling. The data transfer with cross-border entities has changed and will continue in the direction of localization. Further localization demands for systems are also presumed.

The localization naturally affects how the organization is steered and how knowledge is handled. However, with findings from interview 1, it is stated that although there is ongoing localization of applications and systems, the same core and standards are used. The steering is also said to still come from the headquarter. Noticeable is the restriction to send out all data from the local markets, leading to reduced control for the center on what's happening on a personal basis in the local entities (interview 4). Ultimately, regions could use the data regulations as a means to get more power from the HQ due to the reduced data transparency (interview 6).

Apart from data regulations, whether a central or local solution is used also depends on the need for specific customer contact for a customer-centric purpose (interview 4). In general, there is a balance between being able to approach customers differently depending on the market and centralized solutions. For example, standardized processes, such as controlling, are primarily provided from the central side whereas in more volatile areas with strict regulations, e.g. banking, outsourced (local) standard software as a service (SaaS) could be a preferred solution. By using a SaaS, the need to adapt to new legal changes in the different markets is therefore removed. Instead, the responsibility lay with the service provider. Local partners may consequently play a bigger role in the future in ensuring local knowledge in the local market (interview 6). However, for big MNEs, global processes will still be elementary, and all processes must play hand in hand with the global solution (interview 6).

4.3 Organizational roles

Contemporary situation example – Organizational roles

As an effect of the new laws enforced in China, organizations face requirements to mandate data officers with personal liability (Chen, 2021). Additional to new necessary data roles, there are also management questions. Volkswagen did in the past let local German managers go to China to run the business (Saïd Business School, University of Oxford, 2021). According to the correspondent in the webinar (Saïd Business School, University of Oxford, 2021), this didn't lead anywhere in the long run for the company, so instead, they increased the importance of local management. Is not yet clear how to proceed in the long run regarding management (Saïd Business School, University of Oxford, 2021).

Focal company input – Organizational roles

During the past years, the data governance and protections roles have been strengthened within the entire organization as the control of data has become more important and there is now a bigger need for local control and more local people (interview 6). Apart from localization of applications, new prominent data-focused roles and teams are enforced in the different observed regions (Interview 1 & 2). New roles are "Data officers", "Data security officers", "Data privacy officers" in addition to that within each team you need someone responsible for these topics (interview 6).

4.4 Knowledge flow and creation of knowledge

Contemporary situation example – knowledge flow and creation of knowledge

Effect of the tech decoupling ranges from reduced global trade flows and misallocations. Foreign knowledge is a significant driver of domestic innovation and productivity for both China and the United States (Cerdeiro, 2021). Naturally, sustaining the knowledge flow and attaining knowledge is important, and whether the new market situation affects this will be examined with input from the focal MNE.

Focal company input - knowledge flow and creation of knowledge

The general knowledge sharing is said by all interview partners to not be impacted by the distancing between regions. Once the information has reached a certain abstract level, the potential problem is reduced (interview 6). Knowledge sharing itself is not hindered nor the solving of a common interregional problem, e.g. the possibilities to have a call or share

anonymized data are still available (Interview 1). Interview 4 does also not experience that different entities build different knowledge, that knowledge is the same around the globe, and that there is no problem sharing knowledge and coordinating this flow. This is although in an area without the involvement of sensitive data and could be different within special areas such as security & AI encryption due to the regulations in China (Interview 4). One exception mentioned, is that some repositories are not approved in China leading to that different tools being used, and the local people are trained differently inherently leading to a potential to different knowledge generated (interview 4).

What is observed regarding the cross-border flow, however, is the difference in data flow experienced in heavily regulated environments, e.g., financial services and banking, due to stricter regulations. The disruption of data flow is not limited to the US, China, and Europe, but does also e.g. include Korea where it's not allowed to transfer geo/map data out of the country and South America where there are special regulations for SIM-cards (interview 4).

What could be a risk for knowledge creation is pointed out by the interviewee (Interview 2). There could be a decrease of generated knowledge due to the reduction of insight knowledge deriving from analyzing vast data samples. As for the localization of some types of data, the possibility to analyze the same volume of data as previously will not be feasible. However, although the localization of data, there is still a lot of data points that can be connected on a local level (interviewee 6). Another aspect regarding information and data and the creation of knowledge, is the possible change in the valuation thereof. Personal information could be an asset worth money, with focus on improving monetization service offerings, in addition to only being seen as data, especially when considered in conjunction with further data like location, movement, payments for products, etc. and when applying solution models for specific purposes (interview 5). This would clearly be within the boundaries of the legal environment as well as not simply selling data. Interview 6 is additionally stating the importance of data has increased as well as an emerging data collection trend and the necessity to create knowledge by connecting data points.

4.5 Culture of knowledge sharing

Situation example knowledge sharing

The situation of knowledge sharing is an essential part of knowledge management. Multinational corporations exist because of their superior ability to transfer knowledge more effectively compared to the market mechanisms (Gupta & Govindarajan, 2000). Additionally, multinational companies are playing a central role in transferring technology and other forms of knowledge between countries (Almedia, Song & Grant, 2002). However, both of the above statements are dependent on knowledge sharing and the employee's willingness to do so. Hence, understanding if the culture of knowledge sharing is affected in MNEs is important.

Focal company knowledge sharing input

From interview 1, the interviewee does personally not see a trend where knowledge sharing is reduced by the employees. It's motivated by the fact that it's mandatory to communicate with the company and despite regions, the company remains the same. Sharing information and data is seen differently compared to knowledge. Interview 4 states that collaboration between regions and functions was never a problem. One mentioned exception is China as there was no allowance to share information for security solutions to devices with Chinese entities.

GDPR in 2018 is seen as a trendsetter for a new emerging mindset regarding data and data sharing (Interview 2). Interview 2 is also sharing an observation of an increased interest in data sharing; "what are we sharing with whom" is now more important with emphasis on the protection of customer's data. This is a cultural change from earlier years regarding data sharing, as the topic was less acknowledged (Interview 2). Interview 1 has the same perspective regarding that people are getting cautious about the data they are sharing; As you share it online you can always track the logs from the system. "As an effect, persons start to challenge cross-border flow – do we need it?" (interview 1). Interview 6 is also stating the same; there's more caution about what data. A potential future result stated in interview 6, is that there could be an indirect psychosocial impact of sharing knowledge as an effect of the prohibiting of sharing some types of data. This effect derives from the cautiousness and challenging of sharing information and data and its reflected in the sharing of knowledge. However, it will take time for organizations to understand the potential new behavior of the employees which calls for monitoring to understand if any barriers or limitations of sharing

and creating knowledge emerge. The effects of new organizational setups should also be monitored.

5 Analysis

In this section, the empirical results will be compared with the findings in the literature framework to find undiscovered or intensified challenges for knowledge management within MNEs due to the new global dynamics.

5.1 Analysis of the market situation

The direction of the global business development is hard to predict with several possible scenarios, as depicted by Bain and Company (Hoecker &Wang, 2020) as well as from the interviews. However, more restricted globalization can probably be expected, and the premises might depend on which regions the MNE is operating. The direction of the global market development is dependent on how new regulations are imposed, and additional measures from different governmental bodies. It's already possible to scout a trend for stricter regulations regarding data protection and data transfer in the different regions as well as with the market measures restricting global trades. These actions are changing the business landscape which may directly or indirectly affect how multinational enterprises manage their knowledge.

The new regulations in China disrupt the transferal of sensitive and important data, which was similarly affected by the introduction of GDPR in the EU. Although, no evidence from the focal company pointed in a direction where the knowledge management was directly affected thereof. Nevertheless, the involvement of governments in the market is intensified both in terms of regulations and political actions, naturally leading to reduced independence for multinational enterprises. This, in turn, could diminish MNE's capabilities to efficiently manage and transfer knowledge.

5.2 Analysis of the organizational steering

From the perspective of the organizational structures and steering, it is apparent that there will be alterations for the MNEs. As of the new regulations in China, e.g. DSL and PIPL, there's a requirement for MNEs to localize specific processes and businesses to stay compliant. The localization of Tesla's data centers in China is an example of this change (Zhai & Kubota, 2021). Consequently, previously operated centralized services and processes have to be localized and new organizational set-ups are needed. in terms of knowledge, the creation of knowledge shifts towards the regions instead of the headquarters. Hence, a need to

consolidate, compare and assess the different best practices centrally emerges. If this is can be done with existing processes and IT systems must assess. The localization of businesses may cause effects for knowledge transferal as the upcoming need to reconfigure the transmission channels for the intra-corporate knowledge flow (Gupta & Govindarajan, 2000). Furthermore, the challenges highlight some of the problems described by Kalkan (2008). The challenge of dealing with tacit knowledge and the utilization of IT will be intensified, as more knowledge will be localized. Additionally, the cultural complexity may increase well as the challenge to develop new organizational structures. For the latter, it will be a new challenge to solve the rapidly emerging short-term business changes and simultaneously facilitate knowledge management in the long term.

An additional potential arising challenge comes when regions come to different conclusions, and as the new regulations reduce the visibly. Hence, the transparency of data-driven decisions and conclusions could lack a control mechanism. Consequently, a new power balance for the MNEs as the headquarter will have less influence compared to the previous setting. It's also stated that local providers will gain more importance pointing in the same direction. As a result, it's important that the knowledge is not getting fragmented within the MNE, and that the new organizational structure supports efficient knowledge management.

5.3 Analysis of the organizational roles

Effectively of the new regulations in China, it is now a requirement to establish data responsible persons in the organizations. A general need for new roles is introduced, which was emphasized by the interviewees. The future strategy of management and responsibility for MNE's has to be further developed. Volkswagens manager's uncertainty regarding how to manage international locations exemplifies this. Further, from the localization of management, the cultural complexity challenge for global businesses (Kalkan, 2008) may be intensified as of the increased cultural divergence. The topic of organizational roles is closely related to the impact of organizational steering.

5.4 Analysis of the knowledge flow and creation of knowledge

As for the knowledge flow and creation of knowledge, it is a prominent part of knowledge management. Found from the interviews, the newly launched regulations in China will have an immediate impact on the cross-border flow of data to and from China. However, stated by

all interviewees, this disruption of sensitive and important data is not presumed to affect knowledge sharing within the multinational enterprise. That is, the flow of data and information will be altered, although knowledge itself will not be affected and will still be freely transmittable between colleges from different regions. From a knowledge perspective, the knowledge stock as described by Gupta & Govindarajan (2000) might though become more fragmented due to the already described new organizational settings, hence creating a demand for new knowledge flows within the organizations.

Regarding knowledge creation, one disruption that emerges is the reduction of data analytics due to the limitation of transferring all data to the same location. Knowledge generation from local data will still be possible.

5.5 Analysis of the culture of sharing knowledge

What can be said about the culture, is that the willingness to collaborate and share knowledge with colleagues from different regions in the world has not seen an impact. Although newly launched regulations and measures, the ambiance is still that everybody is working for the same company with same objectives. However, there could be an indirect effect emerging from a behavioral difference. It is stated, that employees working with sensitive/important data are getting more cautious of which data to share and also challenge the need to transfer it. Although the sharing of knowledge is not affected by the data flow disruption, the behavioral cautiousness of data transferal could also in a future scenario be reflected in the sharing of knowledge. This is an exploration of a potential upcoming trend not shown within the existing challenges but could emerge as an effect of the tension in the global market.

5.6 Synthesis of the analysis

The analysis of the study is synthesized in the two categories, discovered needs and challenges for MNEs for knowledge management as an effect of the tech decoupling. The needs are areas where the MNE should act immediately, whereas the challenges are of a more conceptual character for the longer term. Regarding the challenges, three already known challenges can be excepted to be intensified, in addition to two newfound challenges. The

results of the analysis can be found in Figure 2.

Emerging Needs and Challenges for MNEs

Needs:
- Monitor how stricter data laws effects the knowledge management.
- Reconfigure the transmission channels.
- Observe the knowledge flow and the knowledge generation from data collections as an effect of localization.

Challenges:
- Dealing with tacit knowledge and the utilization of IT: **Intensified**
- Cultural complexity: **Intensified**
- Development of new organizational structures: **Intensified**
- Localization of knowledge leading to a new power balance within the MNE: **New**
- Restrictiveness among employees to share knowledge: **New**

Figure 2: Summary of needs and new/intensified challenges.

6 Conclusion

The effects of tech decoupling on knowledge management for multinational enterprises have been discussed and compared to existing challenges to answer the research question. It can be concluded, that the global market dynamics have changed as a result of the new regulations and market actions. Additionally, a decrease in globalization can be expected. It predominately affects the flow of data and information due to stricter data laws, e.g. PIPL and GDPR, as well as limitations for companies to operate in different regions, such as LinkedIn in China or Huawei in the US.

Effects that may impact knowledge management derive from a new organizational set-up for MNEs with increased localized activities and impact in addition to reduced data-driven possibilities. The associated challenges regarding new organizational structures, cultural complexity, and the management of tacit knowledge have already been discovered, however, the new market dynamics may increase the impact thereof. New challenges for MNEs regarding knowledge management that may arise from tech decoupling, can be found in a behavioral change among employees as a trend of challenging cross-border data as well as in a new power balance. Currently, the culture of sharing is said to only impact data, however, there is a future possibility that it also will influence knowledge sharing. Regarding the power balance, the localization of knowledge and the less transparency thereof could lead to new tension between the entities and headquarter for MNEs.

6.1 Implications for multinational enterprises

Multinational enterprises should be aware of the potential effects of tech decoupling on knowledge management. MNEs should pay particular attention to the changes in the management of local entities and possible indirect effects thereof, as of the new responsibilities and data handling. Although communication and sharing of knowledge haven’t seen any disruption, it is relevant to ensure that processes for consolidation and sharing of best practices are kept up although the localization. Attention should also be kept regarding the culture of sharing knowledge and monitor if any behavioral changes among the employees occur in terms of cautions for sharing knowledge with colleagues located in different regions.

6.2 Implications for researchers

This study has focused on exploring new challenges for knowledge management deriving from tech decoupling. However, due to this study's conceptual and explorative character, each topic is only addressed on a broad level. Supplementary in-depth research is therefore recommended to quantify and concretize the effects of the alterations, such as the new organizational structure and the potential behavioral changes. Researchers in e.g. psychology, organizational theory, and international business have the potential to explore and map the impact further. In general, it is relevant that researchers observe the rapidly changing global market dynamics and following effects on multinational enterprises' knowledge management.

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Appendix A: Interview Template

Sharing of data:

1. Are you aware of the last years new restrictions and regulations in China, the US and EU?
2. How do you think these effect the business on a regular basis?
3. How has the interaction with cross-border internal entities changed during the last 5 years?
4. How has the interaction with cross-border external companies and institutions changed during the last 5 years?
5. How has the ease of sharing data changed during the last 5 years?
    a. How has the usage of sharing tools, e.g. intranet, to find required knowledge changed during the last 5 years?
    b. How has the capturing of data and information of projects in electronic repository changed?
    c. How has the type of information you share with internal entities changed during the last 5 years? E.g. Personal, sharing information, sharing data

Culture:

1. What is knowledge management for you?
2. How has the knowledge sharing culture changed as of the restrictions and trade tension, e.g. motivation to share/gain knowledge?
3. Do you experience any obstacle for sharing knowledge with colleagues since the last 5 years?
4. Do you experience any new/more prominent obstacles asking for information/knowledge from colleagues since the last 5 years?
5. Do you experience a difference of sharing knowledge between colleagues located in different regions? If so, how?

Organization:

1. How/has structure of the organization changed to adapt to the new regulatory and political environment the last 5 years?
2. How has the overall responsibility for coordinating and overseeing the various knowledge management changed during the last years 5 years?

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