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UDC 005.334

On the topic: "**Risk management system in DHL**"

Specialty: 073 Management

Educational program: Management

Applied for a bachelor's degree

Thesis contains the results of individual work. The use of ideas, results and texts of other authors have references to the relevant source

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Kyiv – 2021

PLAN

INTRODUCTION

DHL Express has been the world leader in international express transport for 50 years. With an unrivaled portfolio of logistics services, DHL continues to innovate and set standards in the international logistics industry and position itself as "the logistics company for the world".

Relevance of the research topic Nowadays, many companies operate in a global environment; they try to do their utmost to deal with a wide range of leading and reputable suppliers, both in developed and developing countries. A DHL business is part of a complex supply chain. Global supply chains are referred to as a source of competitive advantage over other market players (Manuj and Mentzer 2008 AT). The existence of the company in the global environment provides access to labor, components and raw materials, increased opportunities to increase profitability, a better share of product markets, arbitrage opportunities and additional incentives, which may be offered by host governments to attract foreign capital Supply Chain Management is a very complex set of operations and functions with a wide range of inherent risks.

The purpose of the thesis is to provide an explanation of the importance of integrating risk management into business operations and to demonstrate how the choice of an appropriate risk management strategy should be made in order to mitigate the possible consequences. and predict adverse events.

Problem Statement DHL businesses with global supply chains typically have a at least one interruption to their supply chain annually (Njegomir & Rihter, 2015). Corporate management is focused on the 80/20 rule with supply chain disruptions (where 20% of the supply base

consumes 80% of budgetary spending), which emphasizes the potential savings of risk mitigation efforts (Krasteva, Sharma, & Wagman, 2015). The general business problem is the reduction of profitability that Fortune CEOs of consumer-packaged goods (CPGs) companies experience through supply chain disruptions. The specific business problem is that some personal care business supply chain managers lack strategies to mitigate supply chain disruption risk.

Research question and objectives. The purpose of the study is to fill the gap between the theoretical framework based on existing academic research on supply chain risk management strategies for preventing and mitigating disruptions and empirical evidence about their implementation and consequences in a real global business environment collected from logistics managers and practitioners.

Therefore, the research question of the thesis is: Why risk management is the significant part of company 0ohoperations and what strategies should be implemented to avoid disruptions within a supply chain?

The rest of this article is organized as follows. Section 1 provides an introduction, definitions of risk management, a research methodology. Sections 2 and 3 deal with research analyzes that analyze how a company may have managed risk

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SECTION 1. THEORETICAL ASPECTS OF RISQUE MANAGEMENT SYSTEM IN DHL

1.1. Essence of Risk Management system

The section presents a review of the main definitions and summarizes the important literature of this study.

1.2. Definition of risk

In reviewing risk management literature, the first difficult question is, what is supply chain risk? It is particularly difficult to distinguish risk and uncertainty in supply chain operations management. In this section we therefore present relevant definitions.

Risk used to be simply linked to unexpected events. Christopher and Lee (2004) view risk as the "effect of external events such as wars, strikes or terrorist attacks and impact of changes in business strategy". Kleindorfer and Saad (2005) follow the same line and relate risk to i) operational contingencies; ii) natural hazards, earthquakes, hurricanes and storms; and iii) terrorism and political instability. Quinn (2006) also refers the natural and man-made disasters, to "catastrophic events" which are the source of risk.

Tang (2006a) defines risk as an operational as well as a disruption risk, but he however does not distinguish between them. Looking at various perspectives of risk, Spekman and Davis (2004) claim that risk definition can either be objective or subjective.

Risk which relies on probability alone, such as coin flipping or dice throwing, is considered to be objective. However, when the consequences of risk need to be assessed along with its expectation of occurrence, it is categorized as subjective risk.

Chopra and Sodhi (2004) present nine risk categories, which include disruptions, delays, systems, forecast, intellectual property, procurement, receivables, inventory and capacity. They also discuss the impact of implementing a single or combination of mitigation strategies towards supply chain flows. There is no simple solution to managing supply chain risk. The implementation of one strategy in mitigating a particular risk may cause the supply chain to face another risk. Therefore it is important for all members of the supply chain to have a common understanding of supply chain risk. Chopra and Sodhi (2004) propose the use of 'stress testing'. Since each supply chain is unique, the risk mitigation strategies should be tailored accordingly to suit the entire supply chain.

We note that in operations management literature, the terms 'uncertainty' and 'risk' have been used interchangeably. Supply risk usually refers to the occurrence of uncertainties that may halt the inward flow of the supply chain (Harland et al., 2003; Tang, 2006a; Zsidisin, 2003). Zsidisin (2003) classifies supply risk as "the probability of an incident associated with inbound supply from individual supplier failures or the supply market occurring, in which it outcomes result in the inability of the purchasing firm to meet customer demand or cause threats to customer life and safety". On the demand side, even more cases of referring demand risk to uncertainties, for example, the trend of rapid changes of customer demand and the short life cycle of product resulting in fluctuated demand can be noticed. Johnson (2001) defines risk in terms of operational deviations, such as "unpredictable

demand, short product life, rapid product turnover and seasonal changes". In our opinion, these should be considered to be the drivers for demand fluctuation.

Apart from supply and demand, uncertainty can take other forms, for instance technology (Chen and Paulraj, 2004). There also exist different viewpoints on uncertainty. Instead of looking at demand uncertainty as a fluctuation of demand volume, Lee (2002) believes that demand uncertainty should be "the predictability of the demand". A comparison of risk and uncertainty is made by Khan and Burnes (2007). They conclude that risk is measurable and manageable. On the other hand, however, uncertainty may not be measurable. Furthermore, risk emerges as measurable "in the sense that estimation can be made of the probabilities of the outcome". These definitions follow the tradition in the research field of decision analysis.

In another set of literature, risk is viewed as the negative outcome after the impact of events. Christopher and Lee (2004) look at it broadly as any negative consequence resulting from any external event, whereas Paulson (2005) specifically identifies risk as "an event with negative economic consequences". However, some authors view risk as the variance of outcome, no whether it affects the organization positively or negatively (Spekman and Davis, 2004; Crone, 2006).

Recent studies of supply chain risk discuss the elasticity of supply chain performance, which Sheffi (2005) calls Supply Chain Resilient. With the aim of avoiding a risk event, minimizing the effect as well as quickly returning to business, Sheffi defines risk as events with "highimpact/low-probability". Another significant development in this research is the introduction of supply chain preparedness to risk events. Sheffi illustrates eight phases of disruption profile.

What distinguishes one disruption case from another is the severity and duration of the disruption and this depends on the level of preparedness.

1.3. Supply chain risk management

The biggest threat for the supply chain is that risk destroys flows between connected organizations. These flows can relate to information, materials, products and money remaining interdependent of each other. This fact is proved by Jüttner (2005:122) who states that a key feature of supply chain risk is that it extends beyond the boundaries of one company; moreover, such blurred boundaries can become a source of supply chain risks.

Risks in supply chains can come from a number of sources. Trkman and McCormack (2009) summarize several trends that can increase risk exposure, such as globalization, a growing share of companies using outsourcing, reduction of the suppliers' base and reduced buffers, increased demand for just-in-time deliveries and shorter lead-time.

According to Karbalaee et al. (2013), risk can have five various origins both from the supply and demand sides. These origins are not related to each other and can be routed in the infrastructure or have catastrophic, bureaucratic, regulatory or even legal nature. Cucchiella and Gastaldi (2006) divide sources of supply chain uncertainty into two groups: internal and external. Internal sources include availability of production capacity, disruption in the information flow, and compliance to existing regulations. External sources include activities of competitors, political instability, and fluctuations in the price level on the market, extra costs, and the quality of suppliers.

The work by Belloa and Bovell (2012:78) presents two definitions of supply chain *disruptions: "unanticipated events that interfere with the normal flow of*

goods and/or materials in a supply chain" and "an unplanned event that might affect the normal and expected flow of materials, information, and components."

Khan and Burnes (2007) highlight two main types of supply chain risks which companies can suffer from: technologic risk when the company mainly relies on a single (or limited) product source / technology; and strategic risk with high level of dependence from a limited number of suppliers. If the company does not try to change the existing situation, it increases the possibility of such risk exposure with further results in business failure.

Christopher and Peck (2004) classified supply chain risk into five categories: process risk, control risk, demand risk, supply risk and environmental risk (see Figure 1.1). Li and Lin (2006) present further division of environmental risks in terms of suppliers and customers uncertainty and technology development. While Trkman and McCormack 21 (2009) separate sources of uncertainty into two groups that influence the whole approach of dealing with risks: endogenous with the source of risk inside a supply chain leading to the relations' change among tiers (e.g. turbulence on the market and technological progress); and exogenous where the source of risk can be found outside the supply chain with further dividing on discrete (workers' strike) and continuous (exchange rate fluctuation) events.

Furthermore, Manuj and Mentzer (2008:196 – 197 A) discuss four main risk dimensions, namely probability, impact of losses, their speed and frequency. Further division of the speed dimension is following: the rate at which the event leads to loss occurrence, at which losses themselves happen, and the speed of the risk event detection. Supplemented with such issues as increased lead-times and their instability, the physical distance between the company and risk sources, and

the reduced level of control over the supply chain, it increases the frequency and consequences of risk events globally.

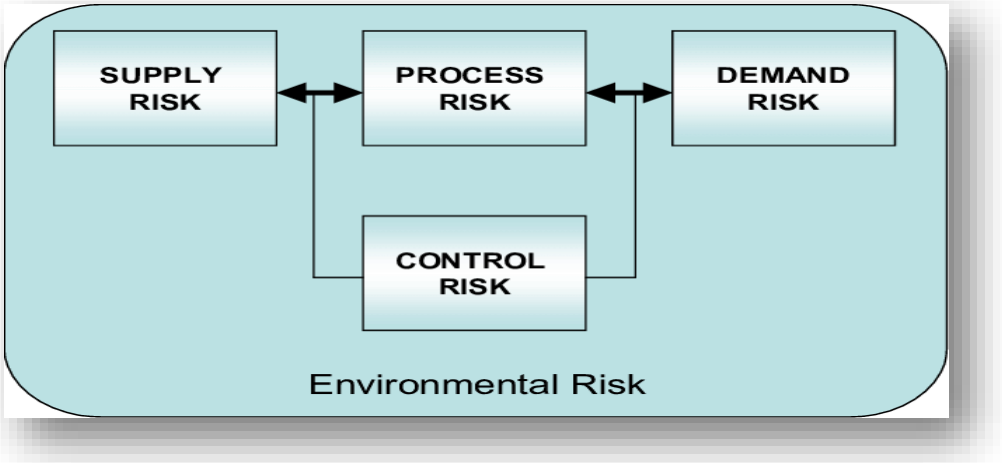


Fig. 1.1 Sources of risk in a supply chain (adopted from Christopher and Peck 2004)

Berger, Gerstenfeld and Zeng (2004) are the first to have integrated the risk of interruption of suppliers in the selection, evaluation and evaluation of suppliers. They present three types of events that can cause disruption in the supply chain: (1) One-off events, an event associated with a particular supplier that disrupts the day-to-day operations of a specific supplier; (2) Super events that can affect all suppliers at the same time; (3) Semi-super events that harm more than one supplier at a time, but not all them. The probabilities of these events can be determined using a decision tree where the financial losses caused by disasters and the operational cost of working with multiple suppliers should be taken into consideration during the analysis.

While no standard risk topology exists, a majority of authors are trying to bring their contribution. Schlegel and Trent (2012:14 – 15) use one of the more straightforward categorizations and four types of risk are provided: hazard risk that

leads to random disruptions such as hurricanes, accidents or even the truck theft as an example; financial risk which receives increasing attention in many organizations today and includes internal and external financial challenges; operational risk that associates with the tactical activities with some examples including poor supplier quality, late deliveries, safety issues and others; strategic risk which relates to decisions made by executive management (mergers and acquisitions, liquidity).

In another classification, four categories of risks are distinguished: supply, demand, operational, and security risks (Manuj and Mentzer 2008 A). Supply risk is the distribution of risk consequences regarding to events in the supply chain that affect the company's ability to meet demand from the customer side or situations that may threaten to the end customer. Operations risk is the distribution of risk consequences regarding to unwanted situations inside the company that affect its ability to manufacture good and provide services, maintain the quality of production, and company's profitability. Demand risk is the distribution of risk consequences regarding to events in the flows connecting the focal company and its customers that affect the frequency of customers' orders placing, and/or variance in the volume and desired assortment to meet their requirements. Security risk is the distribution of risk consequences regarding to events that may become dangerous for human resources, the quality of executed operations, and information systems and databases (stolen data, vandalism).

Later, PrasannaVenkatesan and Kumanan (2012:326) come up with own classification of supply side risks. They divide them into five groups: capacity related, technology related, supply related, currency related, and disasters related. Finally, adapting the classification of Ghoshal, Manuj and Mentzer (2008 A) divide risks as: macroeconomic risks related to economic shifts; policy risks that

include unexpected actions of governments; competitive risks related to the existing uncertainty about later competitors' actions; and resource risks associated with the unexpected gap between available and required resources.

1.2. Risk management

Expansion of supply chains has helped many companies to survive intense competition in order to take advantage of new markets and reduce production costs of production. Such change in the companies' structure has led to more complex and developed global supply chains. In the work by Kamalahmadi and Mellat-Parast (2016), the authors that managing supply chains globally is a rather challenging task because of a complex and dynamic environment that can cause risk of disruption for the company operations.

1.3. Features of Risk management

Risk management is a systematic process that deals with the problem of uncertainty. It is an important discipline under the broad subject of management.

Secondly, one can also refer to it for responding to undesirable events. In this regard, it helps in preparing for worst-case scenarios.

Lastly, it is also a system that helps in making choices. It provides various alternatives and approaches to help managers select one that has minimum chances of losses.

Risk Management Process

Management of risks involves the following five key steps

Step 1: Establishing the Context

Before dealing with risks, managers must be able to understand and identify them clearly. In order to do this, they first need to comprehend the context in which the risks arise.

In other words, managers need to figure which environment their business functions in and what risks may arise therein. They should also be aware of their organization's functions, goals and core activities.

Step 2: Identifying the Loss

After understanding the context, managers should list down all possible risks that may arise. This will depend on the nature of the organization's business, its environment, etc. For example, a company manufacturing chemicals may face the risk of leakage from its production units.

Risks can be of four types.

Firstly, physical risks are those which involve an organization's physical (tangible) assets and environmental factors.

Secondly, Financial risks include the likes of insurance costs, payment of damages, loans, taxes, etc.

Thirdly, risks may also be ethical if they involve harm in the nature of one's beliefs or reputation.

Finally, there can also be legal risks which arise from laws and regulations.

Step 3: Analysing and Evaluating Risks

Every organization faces several kinds of risks but the chances of them occurring differ in every case. Managers should analyze each possible risk individually and evaluate the chances of it happening. This is because they have to accord more importance to serious risks than less serious ones.

A business often incurs financial expenses for mitigating risks. For example, payment of insurance premium, costs of hiring security personnel, etc.

The greater the chances of a risk occurring, the greater will be its cost of mitigation. Analysis of risks, thus, helps in realizing how expensive it will be to prepare for a risk.

Managers can take the help of a 'likelihood scale' to fix the chances of risks occurring. This scale basically ranks risks on the likelihood of them causing losses. They can even rank risks in terms of priorities for this purpose.

Step 4: Treating the Risks

After identifying and analyzing risks, managers next have to treat them. This process can include avoiding risks altogether. Alternatively, it is also possible to reduce the possible impact of a risk.

For example, a factory can deploy safety measures and equipment to prevent injuries to its workers.

One can even transfer risks to other entities. This process includes the use of contracts and notices to shift any possible liability on others.

For example, shopping malls often shift the responsibilities of parked vehicles on their owners in case any damage occurs.

1.3. Methodical approaches of Risk management

1.4. Research design

The composition of the research design involves objectives formed in a clear way from the research question, specified sources from which data were gathered, and a list of difficulties to overcome on the way to the project's success such as data access, time, location and money issues. The main question addressed in this thesis is: How and why should supply chain risk management strategies be implemented in the company?

There is little empirical evidence for the verification of the choice of strategy in the given situation and business environment. Moreover, how the stage of internationalization, the size of the company, the number of suppliers and customers around the world or other important factors influence decision making treat. In addition, it is necessary to check if the choice of the manager was correct or there was a need to change the strategy afterwards. This suggests a deductive element to research design. The deductive aspect is also seen in the use of a

concept frame. Therefore, an exploratory and explanatory research design using the qualitative interview and questionnaires are adopted to study the question

Eriksson and Kovalainen (2008: 21) describe induction as reasoning that draws conclusions from an observation to the findings and it is more general; while in the deduction method conclusions are constructed based on the construction of the theory and the examination of the sources of the existing literature. They claim that sometimes researchers get the combination of these two named approaches removal.

To go further, this research adopts a case study strategy. The case study approach is defined as a research strategy that includes an empirical investigation of a certain phenomenon in the real-life context using multiple sources of evidence (Saunders et al. 2009: 145 - 146). In the particular study, a company is analyzed by depth and from both points of view: the opinion of the company's management complemented by the perspectives of top tier suppliers who may have a same opposite view. A qualitative research plan for this study is chosen because there is not much to known about the phenomenon and a thorough analysis is needed.

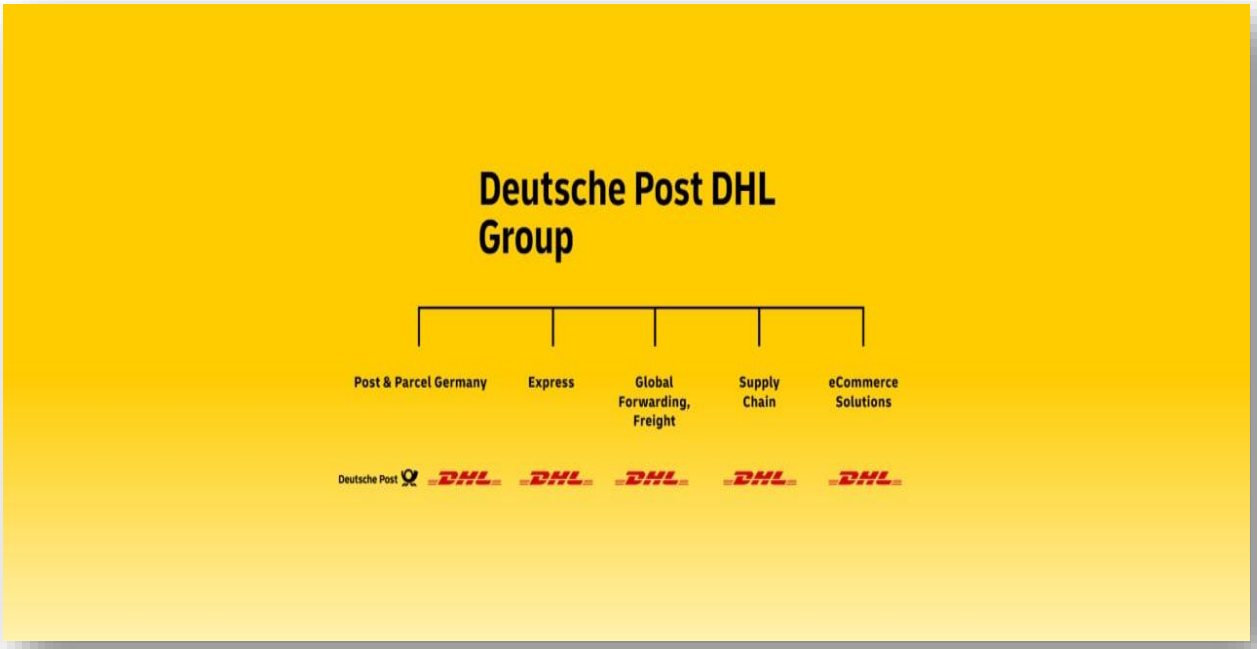
Saunders et al. (2009) state that the case study strategy also has a considerable capacity to generate answers to the question "why?" "As well as" what? " " and how ? " and they used in framing the research question for this study. Only one case is selected because it allows to observe a specific phenomenon from various angles.

SECTION 2. RESEARCH AND ANALYSIS OF RISK MANAGEMENT SYSTEM IN DHL

2.1. Organizational structure and economic of DHL

Global Forwarding, Freight, whose products and services we de- scribe in the Business units and market positions section, Each of the divisions is managed by its own divisional head- Business model and organisation Four operating divisions Deutsche Post AG is a listed corporation domiciled in Bonn, Germany. Under the Deutsche Post and DHL brands, the Group provides an international service portfolio consisting of letter and parcel dispatch, express delivery, freight trans- port, supply chain management and e-commerce solutions. It is organized into the four operating divisions of Post- quarters and subdivided into functions, business units and regions for reporting purposes.

We consolidate the internal services that support the entire Group in our Global Business Services (GBS) unit. Group management functions are centralized in the Corporate Center.



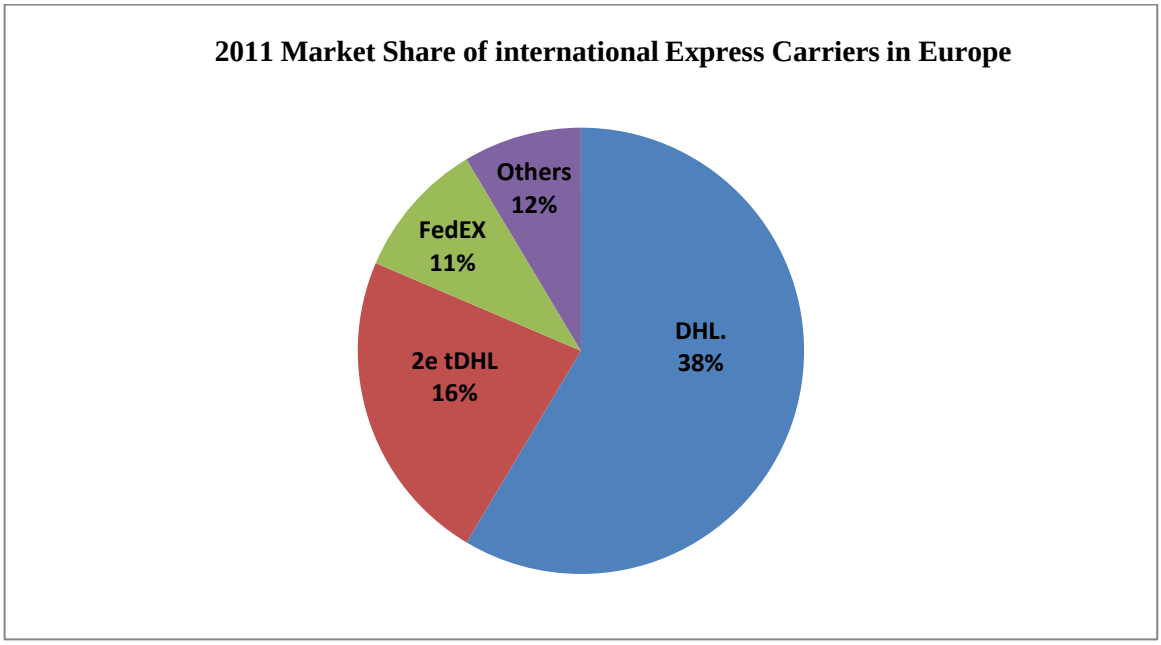
THE BOARD OF MANAGEMENT

The Board of Management, with the consent of the Supervisory Board, has established rules of procedure that lay down the fundamental principles of its internal structure, management and cooperation within the Board of Management. Within this framework, each Board member manages their department independently and regularly informs the rest of the Board about key developments. The Board of Management as a whole decides on matters of particular significance for the company or the Group.

These include all decisions that pursuant to the rules of procedure must be presented to the Supervisory Board for approval as well as those tasks the Board is statutorily prohibited from delegating. The entire Board of Management also decides on matters brought forth by one of its members for decision by the Boardas a whole. In making their decisions, Board of Management members may not pursue personal interests or exploit business opportunities due to the company if

such pursuits are for their own benefit. They are required to disclose any conflicts of interest to the Supervisory Board without delay.

Performance and competitors



Source : capital Market Days

- TNT Should Want To Sell: Given the leadership rotation and lack of strategic direction at TNT, the business will either sell or languish, in our opinion. The Express & Courier industry is populated by sophisticated and large-scale competitors. TNT is a weak # 4 in our opinion.
- FedEx Playing Long Game: TNT in its entirety is a better match for FedEx than a selection of European TNT assets. A TNT deal with FDX would extend FedEx to Asia, in addition to better balancing its global network. Perhaps just as important, FedEx kept those assets away from UPS. Delays and annoyed regulators aside, scuttling the deal cost FDX little.

- Wait And See: If we had to guess, FDX will bid for TNT pretty quickly. TNT Express is probably in disarray and assets can deteriorate if FDX waits too long. The price of the transaction is well within FedEx's capacity and we expect an offer in the coming months**.**

From last week's quarterly update, the German mail and logistics company clearly has a lot of work to do across most of its divisions if it is ever to meet its ambitious guidance for core operating earnings.

Aside from one-off charges, what concerns me a bit is the effect that a mix of negative elements could have on its performance next year and beyond, namely: declining cash flows; rising net debt; and higher investment.

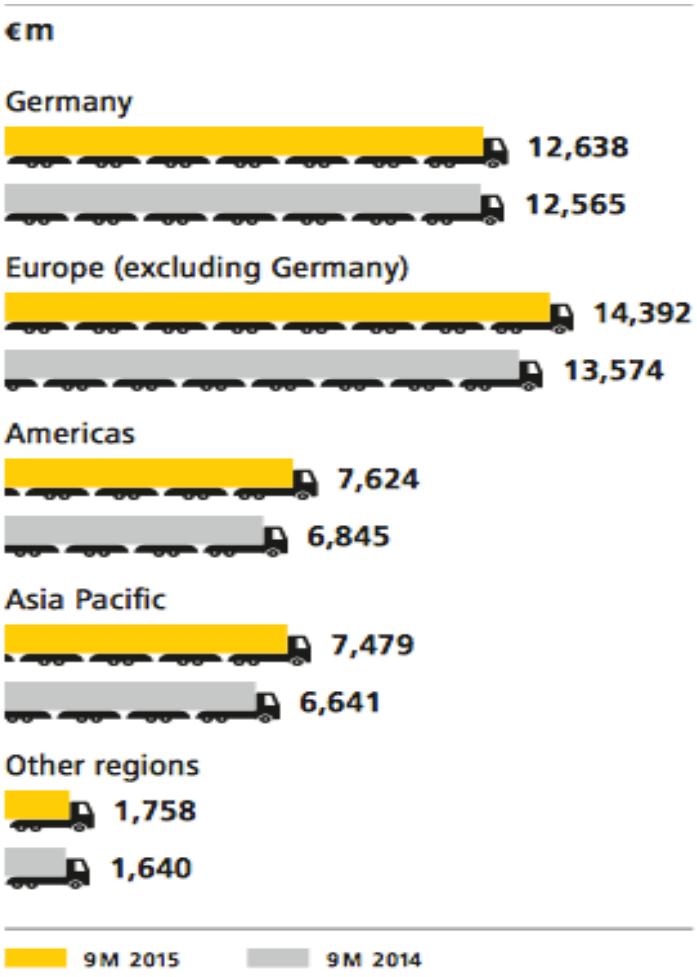
Ebit

Consolidated Ebit, a key measure of performance, is expected to come in between €3.4bn and €3.7bn in 2016, which is at least €1bn more than the Ebit that the group will likely report in 2015.

DP DHL has defined 2015 as a year of transition, during which revenue rose €423m to €14.4bn in the third quarter, driven "to a significant extent by positive currency effects, which increased this item by €498m", it noted.

The financial markets expect higher interest rates from the Federal Reserve in December, and I remain relatively bullish on the dollar, so DP DHL will likely continue to be favoured by its strength.

However, there are some details that are disturbing when it comes to determining its underlying sales performance. Firstly, excluding currency adjustments, quarterly revenue actually declined by €75m in the third quarter, due to lower fuel surcharges, among other things.



Source : Revenues by region

The top-line was essentially flat, but the pain was really felt at operating level, where a few charges contributed to a drop in core operating earnings. As it announced on October 28, the group booked a one-off charge of €345m related to its ill-fated New Forwarding Environment (NFE) IT project, yet the board also

identified further “potential one-off effects of around €200m, €81m of which was already recognised in the third quarter”.

Managing impairment risk is important, and short-term pain for long-term gain is the name of the game, according to chief executive Frank Appel. However, one-off charges are increasingly recurrent in this market and they could draw the attention of credit rating agencies, which is not ideal because DP DHL’s cash flow is falling on the back of higher investment, and its credit rating is safe, but is only a couple of notches above junk.

Moody’s and Fitch rate it “A3” and “BBB+”, respectively, with a stable outlook.

Cash flows

With regard to one-off charges, the sooner they show in the income statement, the better – it is that simple. And Mr Appel is doing all he possibly can in order to manage expectations and deliver long-term value.

“We are taking these measures to underpin our earnings guidance for 2016 and 2020,” he noted last week.

On the face of it, things are not great, but it doesn’t look like Mr Appel is kicking the can down the road. Rather, these accounting adjustments are necessary when certain projects, particularly NFE, fail so miserably.

The Ebit line after charges fell from €1bn to €294m in the nine months of 2015, and was down to €186m from €321m in the third quarter. Excluding one-off items, Ebit would have been below 2014 levels, which is another warning sign for me.

Although not unexpected, its poor performance in the third quarter determined a plunge in earnings per share. Economic profit tells only a part of the story however, and at times can be dismissed, but it cannot have passed unnoticed that the large NFE €345m charge represents over 30% of the dividend payment that DP DHL made to its shareholders over the first nine months of the year.

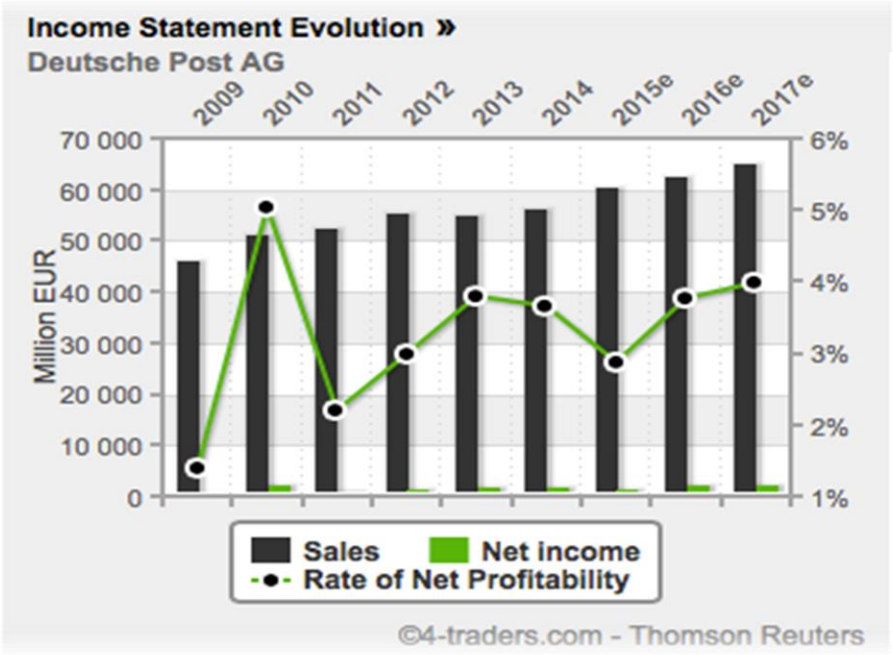
Cash flows are not affected by one-off charges, yet shareholders could have done without them, and could be worried now that the payout ratio may become less sustainable if DP DHL doesn't deliver higher Ebit into 2016. All this becomes more important because dividend risk is not priced into its shares, in my view.

"You look at what Appel has done over the years you are not going to say he failed," one institutional investor recently told me. "But it's a very critical moment, although he'll pull it off."

I am not surprised that management still has the backing of key shareholders, and with the German government holding a 21% stake in the company, there should be little to fear.

However, at €1.1bn in the "first nine months of 2015, net cash from operating activities was down €244m on the previous year," DP DHL also said in its the most recent results, which means a 17% drop on a comparable basis – and operating cash flow fell 25% to €1.5bn before changes in working capital are considered.

Source: Operating cash flow by division, first nine months of 2015



Is a profit rebound on the cards?

Cash and cash equivalents increased from € 2.9 billion at December 31, 2014 to € 2 billion as at September 30, 2015, while net debt doubled to nearly € 3 billion in nine months , while free cash flow is down 90% to just 19 million euros. during the first nine months of 2015. The net leverage remains manageable, but all of this suggests that the group has little margin for error, also in view of higher capital investments than in the past.

	PeP		Express		Global Forwarding, Freight		Supply Chain		Corporate Center/ Other		Consolidation[1]		Group	
	2014	2015	2014	2015	2014	2015	2014	2015	2014	2015	2014	2015	2014	2015
Capex (€m)	207	324	275	496	128	101	196	220	199	101	0	0	1,005	1,242
Depreciation, amortisation and impairment losses (€m)	254	233	366	283	65	372	197	224	166	174	0	−1	1,048	1,285
Ratio of capex to depreciation, amortisation and impairment losses	0.81	1.39	0.75	1.75	1.97	0.27	0.99	0.98	1.20	0.58	–	–	0.96	0.97

Capex

A year ago, when I argued that DP DHL stock looked a lot like an overvalued bond and was trading around its current level, I said higher operational profitability would be hard to achieve.

It has now become a mission to accomplish.

2.2. Analysis of risk management in DHL

Risk management analysis comprises of a series of measures that should be employed to prevent the occurrence or to allow an elimination of risks.

Risk management analysis is nothing more than a set of specific and defined processes to do everything so that the highlighted risks do not occur.

How does risk management analysis work

For efficient risk management analysis, you need to follow a particular process that includes:

- Planning
- Organizing
- Directing and
- Controlling

It refers to the organization's resources, divided into human resources and material resources, which should serve the purpose of minimizing risks, or on the other hand, seek some way to harness them for the benefit of the company.

Identified risks have certain control processes that ensure that their occurrence is avoided or suppressed.

But mere identification is not enough for good risk management analysis. It pays to, at specified intervals, test the effectiveness of the measures mentioned by process analysts. After checking whether each of the risks will not occur, by using proper controls, you should record the results and determine the date of the next process verification and evaluation.

But if the opposite occurs, that is, if you realize that risk control measures are not effective, the whole process should be reviewed and new measures to control risk management should be set out, so they become effective again.

How to perform SWOT analysis.

And: What is business SWOT analysis?

Important concepts about risk management analysis

If there is a possibility that the achievement of a goal is harmed, prevented from occurring or suffers negatively due to the occurrence of uncertain events, we call it the risk.

These so-called uncertain events can be caused by different factors. An efficient risk management analysis should be able to attend to every one of them to be able to identify them promptly in each of the listed cases:

Personnel risks

Caused by a lack of qualified staff and trained professionals to perform their functions. There is a possibility that errors are intentional, this is the result of the dubious conduct. The main risks from staff are:

- Unintentional; resulting in omission or negligence
- Qualifying; that is, the professional cannot properly perform their duties due to a lack of capacity or ability
- Fraud; when conduct unintentionally meets company standards and is characterized by material or values deviations, untruth disclosures, etc.

Process Risks

The occurrence of internal process deficiencies already used by the organization like inadequate performance indicators, inefficient controls, modeling failures and an inability to abide by the current laws.

Systems risks

Arising from inadequate, poorly structured or defective IT systems. Some examples:

- Intermittent networks
- Server crash
- Physical damage to data storage components
- System obsolescence
- Improper maintenance

- Power outage from internal causes
- System slowdown
- Security holes

View more: IT Governance for controlling risks and information

External event risk

Caused by factors other than the internal environment of the company, for example:

- Utility Interruption
- Natural disasters
- Theft
- Vandalism

It is noteworthy that in the context of risk management analysis, this can be defined as the probability of an adverse organizational event and also, those risks that have already been planned and identified. It is the secret: if it has already been identified, we have all the conditions to manage the company's resources to prevent it from occurring.

2.3. Evaluating the effectiveness of risk management system at DHL

All organizations of all kinds face internal and external factors and influences that make it uncertain whether, when and the extent to which they will achieve or exceed their objectives. These objectives are its highest expression of intent and

purpose, and typically reflect an organisation's explicit and implicit goals, values, and imperatives or relevant enabling legislation.

The international risk management standard, ISO 31000:2009, defines risk as the effect of uncertainty on objectives. The effective management of risk is therefore essential if organisations are to achieve their objectives and satisfy the needs of their stakeholders.

It has been long recognised that good governance and effective management are best achieved through the development and deployment within an organisation of one coherent and consistent framework, methodology and vocabulary for management of risk, to be used for all types of activity. This ensures that:

- There is a consistent and defensible basis for decision making at all levels, particularly where effort or capital is expended
- Change activities are more likely to succeed
- The organisation can pre-empt and capitalise on external changes such as those involving demographics, customers' needs and government policy
- All employees are encouraged to focus on and give priority to actions that aid and enhance the execution of strategic and project plans and the organisation's objectives
- The organisation is prepared for and protected from major incidents and losses
- Tactical moves, to identify and seize opportunities are stimulated and enhanced
- Accountability for risks and, most importantly, for controls and the monitoring and assurance of controls is clear and not doubtful.

In time this will also lead to a significant change in culture as the organisation as its employees engage on activities directly related to ensuring the achievement of goals and objectives and the successful completion of projects.

What is a framework and how does it lead to effective risk management?

An organisation's ability to manage risk effectively depends on its intentions and its capacity to achieve those intentions. This intent and capacity is referred to as its risk management framework and is part of its system of governance and management.

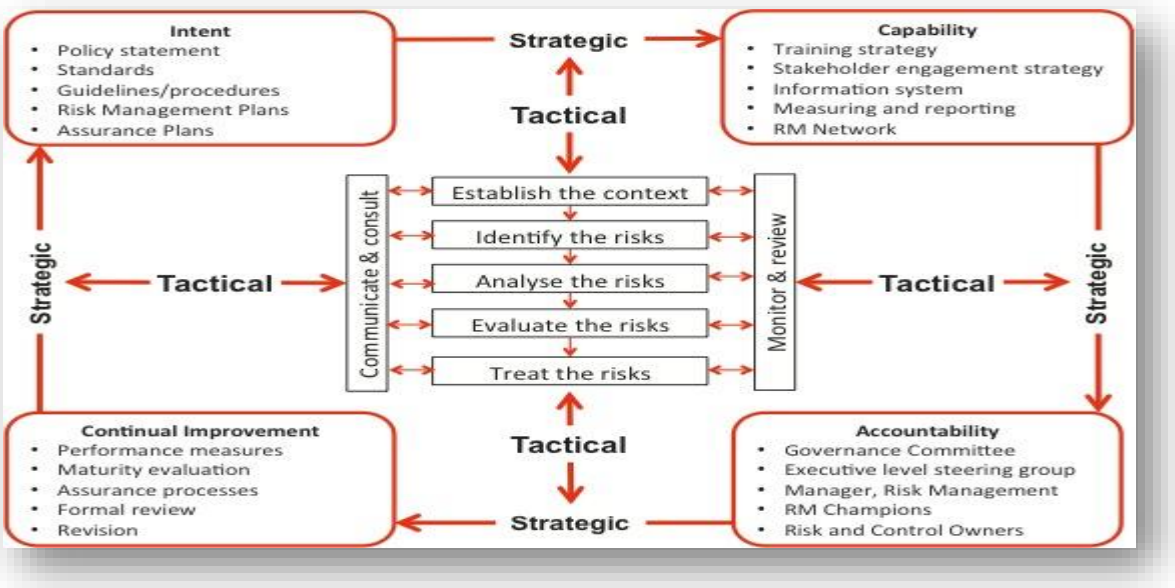
The quality of the framework is important because effective risk management requires:

- Clear expectations from 'the top'
- Appropriate capability (skills, resources, support)
- Sound relationships with stakeholders
- Integration of necessary risk management practices into the day-to-day activities and accountabilities of the management team
- A commitment to continually learn and improve.

The risk management framework should not attempt to replace the natural capability of people to manage risk; rather it should enhance good practices so that the process is reliable, comprehensive and consistent. For this to occur and for the required capability to be achieved, the organisation requires:

1. A set of suitable ‘tools’
2. A coherent approach to training and communicating to people so that they can use those tools in a competent and consistent manner
3. An approach that signals and reinforces the correct behaviour and way of thinking.

The typical elements of a framework and an illustration of how this supports the integration of the risk management process is shown in the figure below.



General approach to effectiveness evaluation

After many years of practical experience in evaluating and enhancing frameworks for risk management in organisations, Broadleaf believes that success depends as much in the manner in which any changes to a framework are developed and implemented as it does in the detail of the tools and written materials generated. This is why we would strongly recommend to our clients that

we help it through a management of change process, where key internal stakeholders are carefully involved and engaged in evaluating the existing approach and in planning how, where and when enhancements will be made.

The core of this management of change process involves internal stakeholder representatives participating in a facilitated gap analysis and evaluation that then leads to a clear and practical enhancement and implementation plan. This is depicted in the “Y Model” shown in the figure and described below.

To enable those stakeholder representatives to participate effectively, they need to be well briefed on current risk management thinking and shown examples drawn from other organizations of elements of a risk management framework.

This approach has the added benefit that the participants of this process then become the organization’s “Champions” who are motivated to lead the implementation process in their own departments and functions. They also act to convince their superiors of the merits of the approach and motivate acceptance and

SECTION 3. IMPROVEMENT OF MANAGEMENT SYSTEM IN "DHL

3.1. WAYS to overcome weaknesses of risk management system at DHL

During this step of the process, controls that could mitigate or eliminate the identified risks, as appropriate to the organization's operations, are provided. The goal of the recommended controls is to reduce the level of risk to the IT system and its data to an acceptable level. The following factors should be considered in recommending controls and alternative solutions to minimize or eliminate identified risks:

- Effectiveness of recommended options (e.g., system compatibility)
- Legislation and regulation
- Organizational policy
- Operational impact
- Safety and reliability.

The control recommendations are the results of the risk assessment process and provide input to the risk mitigation process, during which the recommended procedural and technical security controls are evaluated, prioritized, and implemented.

It should be noted that not all possible recommended controls can be implemented to reduce loss. To determine which ones are required and appropriate for a specific

organization, a cost-benefit analysis, as discussed in Section 4.6, should be conducted for the proposed recommended controls, to demonstrate that the costs of implementing the controls can be justified by the reduction in the level of risk. In addition, the operational impact (e.g., effect on system performance) and feasibility (e.g., technical requirements, user acceptance) of introducing the recommended option should be evaluated carefully during the risk mitigation process.

3.1.1. RESULTS DOCUMENTATION

Once the risk assessment has been completed (threat-sources and vulnerabilities identified, risks assessed, and recommended controls provided), the results should be documented in an official report or briefing.

A risk assessment report is a management report that helps senior management, the mission owners, make decisions on policy, procedural, budget, and system operational and management changes. Unlike an audit or investigation report, which looks for wrongdoing, a risk assessment report should not be presented in an accusatory manner but as a systematic and analytical approach to assessing risk so that senior management will understand the risks and allocate resources to reduce and correct potential losses. For this reason, some people prefer to address the threat/vulnerability pairs as observations instead of findings in the risk assessment report.

3.1.2. RISK MITIGATION

Risk mitigation, the second process of risk management, involves prioritizing, evaluating, and implementing the appropriate risk-reducing controls recommended from the risk assessment process.

Because the elimination of all risk is usually impractical or close to impossible, it is the responsibility of senior management and functional and business managers to use the least-cost approach and implement the most appropriate controls to decrease mission risk to an acceptable level, with minimal adverse impact on the organization's resources and mission.

3.1.3. RISK MITIGATION OPTIONS

Risk mitigation is a systematic methodology used by senior management to reduce mission risk.

Risk mitigation can be achieved through any of the following risk mitigation options:

- Risk Assumption. To accept the potential risk and continue operating the IT system or to implement controls to lower the risk to an acceptable level
- Risk Avoidance. To avoid the risk by eliminating the risk cause and/or consequence (e.g., forgo certain functions of the system or shut down the system when risks are identified)
- Risk Limitation. To limit the risk by implementing controls that minimize the adverse impact of a threat's exercising a vulnerability (e.g., use of supporting, preventive, detective controls)
- Risk Planning. To manage risk by developing a risk mitigation plan that prioritizes, implements, and maintains controls
- Research and Acknowledgment. To lower the risk of loss by acknowledging the vulnerability or flaw and researching controls to correct the vulnerability
- Risk Transference. To transfer the risk by using other options to compensate for the loss, such as purchasing insurance.

The goals and mission of an organization should be considered in selecting any of these risk mitigation options. It may not be practical to address all identified risks, so priority should be given to the threat and vulnerability pairs that have the potential to cause significant mission impact or harm. Also, in safeguarding an organization's mission and its IT systems, because of each organization's unique environment and objectives, the option used to mitigate the risk and the methods used to implement controls may vary. The "best of breed" approach is to use appropriate technologies from among the various vendor security products, along with the appropriate risk mitigation option and nontechnical, administrative measures.

3.1.4. RISK MITIGATION STRATEGY

Senior management, the mission owners, knowing the potential risks and recommended controls, may ask, "When and under what circumstances should I take action? When shall I implement these controls to mitigate the risk and protect our organization?"

The risk mitigation chart in Figure3.1. addresses these questions. Appropriate points for implementation of control actions are indicated in this figure by the word YES.

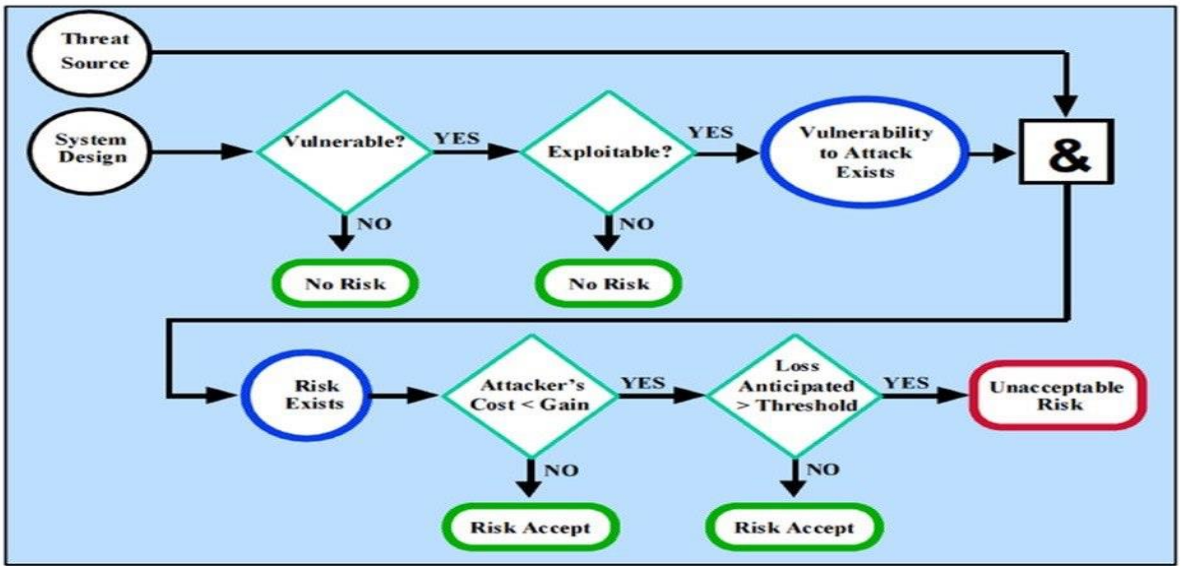


Fig. 3.1. Risk Mitigation Action Points

This strategy is further articulated in the following rules of thumb, which provide guidance on actions to mitigate risks from intentional human threats:

- When vulnerability (or flaw, weakness) exists → implement assurance techniques to reduce the likelihood of a vulnerability's being exercised.
- When a vulnerability can be exercised → apply layered protections, architectural designs, and administrative controls to minimize the risk of or prevent this occurrence.
- When the attacker's cost is less than the potential gain →apply protections to decrease an attacker's motivation by increasing the attacker's cost (e.g., use of system controls such as limiting what a system user can access and do can significantly, reduce an attacker's gain).
- When loss is too great → apply design principles, architectural designs, and technical and nontechnical protections to limit the extent of the attack, thereby reducing the potential for loss.

The strategy outlined above, with the exception of the third list item ("When the attacker's cost is less than the potential gain"), also applies to the mitigation of risks arising from environmental or unintentional human threats (e.g., system or user errors). (Because there is no "attacker," no motivation or gain is involved.)

3.2. Analyzing alternatives for Improvement in risk in dhl

The discussions have ranged from what it is and why it matters to how it should be implemented. With respect to the "what is it" question, I have always believed that a fundamental purpose of ERM is to provide the discipline and control to ensure that risk management capabilities are improved continuously in a constantly changing business environment. This underlying purpose frames the question, "why improve risk management?"

We believe there are six fundamental reasons for improving risk management. Each serves to help elevate risk management to a higher level and drive improvement of risk management capabilities in a changing business environment. We discuss them below.

1. Reduce unacceptable performance variability

Most companies tend to focus on traditional risks that have been known for a long time. Risk assessment processes also must undertake a systematic approach to anticipating unknown and emerging risks. Accordingly, management must (a) evaluate the likelihood, impact, velocity, persistence and response readiness around major events; and (b) develop responses that either prevent high-impact

events from occurring or manage their impact on the entity if they occur, particularly if they are high-velocity and high-persistence in nature. Learning of critical risks too late or by accident spawns the type of “firefighting” that drains resources, creates new vulnerabilities and erodes brand value.

A key point in this regard is that market capitalizations often exceed historical balance sheet values significantly. Furthermore, the market capitalization of most companies cannot be fully rationalized by historical and prospective future earnings and cash flows. There is a gap attributable to intangible assets supporting business models that impact market valuations. Just as potential future events can affect the value of tangible physical and financial assets (and the related contractual obligations), so, too, can they affect the value of other sources of enterprise value, such as significant customer assets, employee/supplier assets and such organizational assets as the entity’s distinctive brands, differentiating strategies, innovative processes and proprietary systems. This is the essence of what a strategic approach to risk management contributes to the organization – the elevation of risk management to a strategic level by broadening its application to ALL sources of value, not just physical and financial ones. Thus, the challenge is to elevate the line of sight of the limited traditional risk management focus to a strategic level. With this broadened perspective, effective risk mitigation and response planning increases the emphasis on reducing earnings volatility, minimizing the risk of earnings-related surprises and managing key performance indicator (KPI) shortfalls.

2. Align and integrate varying views of risk management

There are many silos within organizations with a point of view on managing risk (e.g., treasury, insurable risk, EH&S, IT, and within the various business units). Silo mentality inhibits efficient allocation of resources and management of common risks across the enterprise. When there are multiple functions managing multiple risks, there is a need for a common framework that:

- Assesses the need for a Chief Risk Officer (or equivalent executive), including that individual's role, authority and reporting lines;
- Integrates risk management into critical management activities (e.g., strategy-setting, business planning, capital expenditure and performance management processes);
- Links risk management to more efficient capital allocation and risk transfer decisions;
- Focuses on the importance of risk culture on risk-taking behavior and risk management performance;
- Increases transparency by developing quantitative and qualitative measures of risks and risk management performance (KRIs); and
- Aggregates common risk exposures across multiple business units with the objective of understanding the overall profile of the greatest threats to the enterprise as a whole and formulating an integrated enterprise wide risk response.

3. Build confidence with stakeholders and the investment community

As institutional investors, rating∆ agencies and regulators increase their focus on the importance of risk management in their assessments of companies,

management may be incented or even required to disclose and comment on the organization's capabilities for understanding and managing risk. These disclosures are intended to enable stakeholders to make informed assessments as to the viability and sustainability of the organization and whether returns are adequate in relation to the risks undertaken. As companies increase the transparency of their risks and risk management capabilities and improve the maturity of their capabilities around managing critical enterprise risks, management will be able to articulate more effectively how well they are handling existing and emerging industry issues.

4. Enhance corporate governance

Risk management and corporate governance are inextricably linked; each augments the other. Elevating risk management to a strategic level strengthens board oversight, forces an assessment of existing senior management-level oversight structures, clarifies risk management roles and responsibilities, sets risk management authorities and boundaries and effectively communicates risk responses in support of key business objectives. All of these activities are germane to good governance. By the same token, effective governance sets the tone for (a) understanding risks and risk management capabilities and (b) aligning risk appetite with the entity's opportunity-seeking behavior. Directors often ask, "what are the risks, how are they managed and how do you know?" An effective risk management process provides the answers.

5. Successfully respond to a changing business environment

When the business environment changes, the pace of change accelerates and the effects of change are disruptive, organizations must become better at

identifying, prioritizing and planning for risk. Management must (a) understand the critical assumptions underlying the strategy and business model and (b) monitor the vital signs in the external environment to ascertain whether market trends and developments are occurring that render one or more of these critical assumptions invalid. This approach provides relevant information for decision-making and drives management to identify alternative future scenarios, evaluate the likelihood and severity of those scenarios, identify priority risks and improve the organization's capabilities around managing those risks. As the environment changes, new risks emerge and are escalated in a timely manner for action and possible disclosure, impacting how resources are allocated across the organization.

6. Align strategy and corporate culture

Management must create risk awareness and an open, positive culture with respect to risk and risk management. In such an environment, individuals can raise issues without fear of retribution. It takes a lot of work to sustain an internal environment of this nature. With respect to matters of enterprisewide importance, centralized policy-setting:

- Creates greater focus, discipline and control;
- Clarifies the distinction between risk-taking and risk-avoidance behaviors;
- Improves tools for quantifying risk exposures;
- Increases accountability for managing risks across the enterprise; and
- Facilitates timely identification of changes in an entity's risk profile.

Effective alignment of strategy and culture encourages balance in both the entrepreneurial activities and control activities of the organization, so that neither one is too disproportionately strong relative to the other.

These six fundamental reasons for improving risk management provide a perspective as to management's purpose in improving risk management capabilities. Each reason serves to help elevate risk management to a higher level and drive improvement of risk management capabilities in a changing business environment. Continuous improvement efforts can enable organizations to align risk appetite and strategy, enhance risk response decisions, reduce operational surprises and losses, identify and manage cross-enterprise risks, provide integrated responses to interrelated risks, seize "early mover" opportunities and improve deployment of capital.

As the pace of disruptive change quickens, risk management is becoming a root differentiator between mere survivors and industry pacesetters. Risk management capabilities aligned with the speed of risk and a changing marketplace protect **reputation** and **brand image** and engender confidence in facing the future. Is this enough to warrant continuous improvement in risk management? We expect more boards and executive management teams to agree that, indeed, this is more than enough.

3.3. Effectiveness the improvement program implementation of risk

The ways in which these programs can support and be supported by guidelines is, so far, poorly charted, although journal articles, conferences, and

similar information sources are beginning to focus on the more practical challenges of incorporating guidelines into programs for quality, cost, and risk management. This chapter explores some of those challenges and presents the rationales for investing resources to overcome or manage them.

Despite the near universal appeal of the quality-of-care rationale, cost containment appears to be the most urgent and contentious motive behind calls for guidelines development and use. Were it not for this motive, the recent flood of interest in and support for practice guidelines would probably have been a more modest stream. The second section of this chapter examines how cost management programs may employ guidelines, and the next chapter describes the committee's vigorous debate about what developers of guidelines should do to better support these programs.

Relatively few existing guidelines appear to have been prompted primarily by liability concerns. Nevertheless, the broadly perceived medical malpractice "crisis" has inevitably made the role of guidelines an issue in risk management programs and tort law. The last section of this chapter takes up this topic.

Quality Assurance an Improvement

Basic Concepts and Propositions

The IOM has defined quality of care as "the degree to which health care services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge" (IOM, 1990i, p. 21). To the extent that guidelines are based on scientific knowledge, estimate

expected health outcomes, and delineate current professional judgment, they clearly have a role to play in assessing and assuring the quality of care.

Efforts to ensure high-quality care must prevent or, alternatively, detect and overcome three main problems: (1) overuse of unnecessary care and of inappropriate care, (2) underuse of necessary care, and (3) poor performance (in both the technical and interpersonal senses). Most experts now agree that a comprehensive approach to quality of care must address all three problems, perhaps to different degrees depending on the setting or nature of the care and various local or institutional factors. Good practice guidelines have the potential to contribute in each area.

Continuous Quality Improvement

The case studies in the extent to which the use of guidelines to improve quality of care is a subtext in a managerial and policy debate over the relative contributions of traditional QA strategies and newer quality management approaches. These approaches are variously called total quality management (TQM) or continuous quality improvement (CQI). This discussion, which employs the latter term and abbreviation, relies on a composite model of CQI based on principles described in recent literature1 and on observations drawn from the health care press, committee site visits, and other discussions. (The IOM committee that studied issues of quality assurance in Medicare [IOM, 1990i] compared traditional QA and CQI models in more depth.)

The growing interest in CQI is reflected in statements by the Joint Commission on Accreditation of Health care Organizations that it intends to shift from a QA to a CQI perspective and develop new principles and standards of hospital accreditation to reflect this shift (O'Leary, 1991). In describing the Joint Commission approach, O'Leary (1991) says, "We tend to use CQI . . . because to us the term means a way of life in an organization. Total quality management . . . might imply that there is a single management style that is necessary for all of this change to happen" (p. 74). A recent American Hospital Association survey states that more than 40 percent of reporting hospitals say they are engaged in continuous quality improvement (Utilization Review Newsletter, 1991b).

CQI models are generally described in terms of a set of reinforcing principles for implementing change. They aim to make nonpunitive tactics for quality assurance more usable and, it is hoped, more effective than they have been under traditional approaches. Each of these principles has implications for the way practice guidelines may be incorporated into the fabric of health care organizations.3 The principles emphasize the following:

- close relationships between so-called customers and suppliers, that is, the partners in any given health care transaction; errors
- being more often the result of defects in systems (e.g., those for reporting test results or scheduling operating rooms) than the consequence of individual deficiencies ("bad apples");4 planning, control, assessment, and improvement activities grounded in statistical and scientific precepts and techniques;
- reliance on internal (self-) monitoring—as opposed to external (regulatory) inspection—with mistakes viewed as "treasures" that should be used for

learning and for resolving problems rather than as an occasion for punishment;

- standardization of processes (decreasing their variability) to reduce the opportunity for error and to link specific care processes to health outcomes;
- feedback to practitioners of statistical information on how their practices may differ from those of their peers or depart from evidence-based standards for practice;
- Visible commitment to quality by the top leadership of the organization and involvement by all parts of the organization in processes of quality improvement; and a striving for continuous improvement in contrast to simply achieving preset goals.

Within this framework, sound practice guidelines and medical review criteria have several possible uses. First, to the extent that guidelines become more sensitive to patient preferences and participation in decision making, they should improve patients' informed consent, their participation in decision making and, ultimately, their satisfaction with both the processes and outcomes of care. Second, guidelines and review criteria could play a role in identifying possible quality problems arising from underuse, overuse, or incompetent provision of care. They may be particularly useful in instances in which short-term health outcomes (those that are most readily employed) may not be good indicators of long-term results.

Third, to the extent that guidelines identify how compelling is the evidence for certain clinical practices, they will help in determining priorities for improving or standardizing specific patterns of clinical care and in sorting out competing claims for funding for biomedical and outcomes or effectiveness research. Fourth, participation by clinicians in the review, critique, and improvement of practice

guidelines can help bring the science of medicine more forcefully into the equivalent "cycles" emphasized by CQI.

Although practice guidelines have a potential role in CQI, some aspects of CQI models or strategies may deflect attention from guidelines. To date, CQI efforts have tended to focus more on nonclinical than on clinical issues. Quality problems arising from poor clinical performance and decision making thus have not been highlighted (Causey, 1991

How much this near-total emphasis on administrative rather than clinical processes will change as CQI becomes more institutionalized is unknown. Also unclear is how much the focus should change given the unknown magnitude of clinical versus nonclinical quality programs and the relative susceptibility of each to improvement. The focus on nonclinical issues is, in any case, understandable.

Nonetheless, even when clinical outcomes are at issue, practice guidelines and outcome measures do not appear to be widely perceived or explicitly applied as benchmarks for informing or assessing performance. For example, in a recent article examining CQI concepts and applications for physician care, the only reference to practice guidelines occurred in a discussion on the need for chart review and other monitoring activities to supplement CQI (Kritchevsky and Simmons, 1991).

Among the hospitals visited during this study, several were using or trying to develop clinical protocols or pathways that specified the sequence and timing of various interventions for different clinical problems; the object was to standardize practice and reduce errors. (Appendix A presents a pathway for coronary artery bypass surgery.) Most pathways in these hospitals and elsewhere appear to be built on implicit clinical judgments and local statistical data rather than on

systematically developed practice guidelines (Coombs, 1991). This reflects the highly operational environment of pathway development and the relatively immediate opportunities for incremental action, monitoring, and adjustment. The focus of most pathways appears to be when and how to undertake a particular intervention (such as cardiac monitoring or respiratory therapy), not whether the intervention is appropriate.

Similarly, in confidential materials reviewed by the committee, several organizations structured their feedback to physicians almost entirely in statistical terms, in part because they feared that substantive guidelines might antagonize physicians, at least initially. An individual physician might be informed how often he or she performed a particular procedure compared with patterns of care for the same procedure by peers—without an explicit accompanying statement of the appropriate indications for the procedure.

Medical Review Criteria

Although CQI programs may emphasize professionalism and internal quality improvement rather than regulation and external inspection, both approaches are needed for a public program such as Medicare and for private health plans that are accountable to employers and others for their performance. How well a continuous improvement mentality can dovetail with outside monitoring, periodic audits, and externally developed review criteria is an important—and unanswered—question. The characteristics of specific medical review criteria and the processes for developing and applying them can make coexistence either easier or more difficult.

General Issues in the Use of Medical Review Criteria

Medical review criteria may be used for quality assessment and improvement purposes and also as part of utilization management programs that aim to reduce spending for unnecessary and inappropriate care. Some will be derived from existing practice guidelines; others may be developed de novo. Like guidelines for clinical practice, some review criteria will be more credible, sophisticated, and useful than others.

Although quality and utilization review require specificity in review criteria, these criteria will not necessarily incorporate every recommendation or specification contained in a set of guidelines. For example, in the judgment of a review organization, some elements of a set of guidelines to assist clinical decision making may not provide sufficient additional information to justify the cost of using them in the review process.

Selected Illustrative Activities Related to Medical Review Criteria

Public Sector Medicare peer review organizations have for the past few years been expected to carry out a variety of utilization review activities, chiefly preprocedure and preadmission review as well as some retrospective review (IOM, 1990i, see especially vol. 2). The PROs, which are regulated and directed in great detail in many respects, have been explicitly granted considerable freedom either to use national criteria or to develop their own criteria for these tasks, based on local patterns of practice.

In addition to these efforts, the agency will create a new expert panel to develop criteria for evaluating medical review criteria. The panel will consist of representatives of Medicare PROs, health maintenance organizations, private insurers, and others in the private sector, as well as HCFA staff.

Private Sector Value Health Sciences (VHS), a for-profit utilization management company, creates its preprocedure and other prior-authorization review criteria in a formal manner. Originally it based its Medical Review System (MRS) criteria on appropriateness indications developed by a team of researchers at the RAND Corporation and the University of California at Los Angeles. VHS incorporated those very complex indications through a specific set of steps and supporting tools into detailed computer algorithms. The RAND work is in the public domain; the VHS work is not. Other companies are developing somewhat similar strategies linked to the RAND methodology (Winslow, 1990).

Directions for Quality Assurance Strategies

The committee believes that well-developed, scientifically based practice guidelines have an important role to play in assessing and assuring the quality of health care services provided in this country. Clear, specific guidelines and associated review criteria should help deter or remedy problems of overuse of care, underuse of care, and poor technical and interpersonal provision of care. Guidelines accepted by those responsible for providing care, those responsible for financing it, and those responsible for monitoring care in the public interest are one means of bridging the chasm between internal and external quality assurance strategies.

With respect to models of quality assurance as discussed earlier, the committee urges that their focus on systems problems, on improvement of average performance, and on variation reduction be more systematically and explicitly joined with an effort to apply and improve sound guidelines for clinical practice. Specifically, the committee urges the following:

- Guidelines, medical review criteria, and other evaluative tools should be used both to improve average performance and—as is still important—identify substandard performance.
- Analyses of how individual practice patterns differ from average patterns should go beyond statistical analysis to consider relevant practice guidelines as benchmarks for performance.
- Both the statistical information from such analyses and the pertinent guidelines should be part of educational feedback on practice patterns.
- Evaluations of performance and outcome data should seek to determine the sources of poor outcomes and deviations from guidelines so that systems problems can be corrected, information efforts strengthened, and, if necessary, impaired practitioners dealt with through counseling, limiting of privileges, or other appropriate mechanisms.
- Evaluations of performance and outcomes data should also be used to determine whether practice guidelines ought to be updated or revised.
- Developers of guidelines and health care institutions should convene educational conferences to acquaint practitioners with specific guidelines and provide an opportunity for them to discuss and plan setting-specific applications.
- Institutional activities to develop guidelines or adapt national practice guidelines should aspire to the attributes for guidelines described in Chapter 1 of this report.

The committee suggests that the popularization of continuous quality improvement in the health arena may have underemphasized a principle that was clearly articulated by Deming and others in their original discussions of CQI in the industrial sector. This principle is that an organization must integrate the science of

its field into its day-to-day workings. When applied to health care, the principle brings the role of science-based guidelines more to the fore. In other words, each of the activities listed earlier is a vehicle for bringing science-based guidelines into efforts at quality management and improvement.

In addition, the committee recognized the controversy that has developed over the use and content of medical review criteria, and consequently identified several desirable attributes of such criteria. These eight attributes are analogous to those described in Chapter 1 for clinical practice guidelines. They are listed in Table 5-1. Both sets of attributes build on the IOM report on quality assessment and assurance for the Medicare program, which identified 23 desirable attributes of what it termed appropriateness indicators, case-finding screens, and evaluation and management criteria.

Table 3.1. Desirable Attributes of Medical Review Criteria

Attribute	**Explanation**
SENSITIVITY	Review criteria are sensitive when it is highly likely that a case will be identified as deficient given that it really is deficient. (This assumes that a guideline or other source provides a "gold standard.")
SPECIFICITY	Review criteria are specific if it is highly likely that they will identify truly good care as such.
PATIENT	Review criteria specifically identify a role for patient preferences

RESPONSIVENESS	or the process for using them allows for some consideration of patient preferences.
READABILITY	Review criteria are presented in language and formats that can be read and understood by nonphysician reviewers, practitioners, and patients/consumers.
MINIMUM OBTRUSIVENESS	Review criteria and the process for applying them minimize inappropriate direct interaction with and burdens on the treating practitioner or patient.
FEASIBILITY	The information required for review can be obtained easily from direct communication with providers, patients, records, and other sources, and the decision criteria are easy to apply. Review criteria are accompanied by explicit instructions for their application and scoring.
COMPUTER COMPATIBILITY	Review criteria are straightforward enough that they can be transformed readily into the computer-based protocols and similar formats that can make the review process more efficient for all involved parties.
APPEALS CRITERIA	Criteria provide explicit guidance about the considerations to be taken into account when adverse review decisions are appealed by professionals or patients.

Generally, the committee would prefer carefully devised "national" review criteria to those developed locally, for reasons that are discussed more thoroughly in Chapter 7's examination of local adaptation of practice guidelines. In addition, like guidelines, review criteria should be accompanied by documentation of the procedures followed, the participants involved, and the evidence or guidelines used as a basis for designing them. By providing such information, review organizations can respond to some of the more serious criticisms of their credibility.

COST MANAGEMENT

Virtually everyone involved in health care stands to benefit from guidelines that offer decision makers careful estimates of the costs of alternative courses of care in relation to their benefits. Health care institutions may refer to such guidelines in making investment and other decisions. For example, although recent reports about the costs and benefits of alternative thrombolytic drugs are not formal guidelines, they may influence purchasing decisions by hospitals as well as patient management decisions by individual practitioners (O'Donnell, 1991). Similarly, hospitals may look to similar reports about anti-infective agents to control nosocomial infections as a means of selecting a cost-effective agent (Weinstein et al., 1986). New research findings in turn may challenge these results—a fact of life for clinicians and those trying to advise them.

Public and private payers are clearly interested in guidelines as potential instruments to control costs. That kind of attention is a major source of anxiety for professional groups that are involved in developing guidelines and for individual professionals who are exposed to payer efforts to influence practice in conformity with guidelines.

Others involved in guidelines development and related technology assessment efforts see payer interest as a major source of support. One analysis of the potential gains to be made by eliminating unexplained variation in 25 common medical interventions argues that the savings produced by convincingly executed technology assessments of these services would greatly outweigh the cost of the assessments (Phelps and Parente, 1990). Whether reality can be so ordered that it comes close to matching this potential is untested. The committee reiterates its earlier caution against overly optimistic expectations that guidelines, taken collectively, will produce net reductions in the rate of increase in health care spending.

Payers can use guidelines in various ways: (1) to help determine health insurance coverage and avoid payment for unnecessary or inappropriate care, (2) to aid in selecting or credentialing practitioners for participation in various health plans or institutions, and (3) to tailor other economic incentives to affect practitioner or patient behavior. Such approaches usually do not depend on a specific organized practice setting; that is, they can affect practitioners and patients in solo or group practice settings as well as those in larger organizational or institutional settings. Some approaches may be more or less confined to third-party payers whereas others may be shared by health care institutions, quality review programs, and others.

The following sections discuss how these cost-management strategies may support and be supported by practice guidelines and review criteria. One section discusses legal liability issues for third-party payers and others, particularly as these issues relate to decisions about payment.

CONCLUSION

Every business and organization faces the risk of unexpected, harmful events that can cost the company money or cause it to permanently close. Risk management allows organizations to attempt to prepare for the unexpected by minimizing risks and extra costs before they happen.

Risk management plan and considering the various potential risks or events before they occur, an organization can save money and protect their future. This is because a robust risk management plan will help a company establish procedures to avoid potential threats, minimize their impact should they occur and cope with the results. This ability to understand and control risk enables organizations to be more confident in their business decisions.

This dissertation aims to understand IT-enabled knowledge management in supply chains – an increasingly important and yet substantially under-researched area in IS literature. Specifically, the dissertation focuses on the technology antecedents and performance consequences of knowledge management by supply chain firms. Taking the perspective of a supply chain dyad, the dissertation first presents a survey research that examines the relationship between the supply chain‟s IT capability and knowledge management capability, and the knowledge management capability‟s impact on supply chain performance. The results suggest that the ability of supply chain firms to collectively manage knowledge resources is an important requirement of supply chain strategic performance. In addition, supply chains‟ IT infrastructure capabilities facilitate supply chains in managing knowledge through the supply chains‟ relational capability.

REFFENCES

1. Aven, Terje (2016). Risk assessment and risk management: Review of recent advances on their foundation. European Journal of Operational Research,253:1–13.
2. Bai, Hesong, Yufang Wang & Jian Wang (2010). Study on the Strategies of Supply Chain Risk Management. Logistics Systems and Intelligent Management, IEEE, 1:105 – 109.
3. Belloa, Daniel & Leah Bovell (2012). Collaboration analysis: Joint resolution of problems in global supply networks. Information Knowledge Systems Management, 11:77 – 99
4. Amin, S. H., & Zhang, G. (2013). A multi-objective facility location model for closedloop supply chain network under uncertain demand and return. Applied Mathematical Modelling, 37, 4165-4176. doi:10.1016/j.apm.2012.09.039
5. Anupindi, R., Akella, R., 1993. Diversification under supply uncertainty. Management Science 39 (8), 944–963.
6. Arlbjorn, J. S. and Halldorsson, A., 2002. Logistics knowledge creation: reflections on content, context and processes. International Journal of Physical Distribution and Logistics Management 32 (1), 22-40
7. Saunders, M., P. Lewis & A. Thornhill (2009). Research Methods for Business Students. Harlow: Prentice Hall, the 5th edition, 649. Schlegel, Gregory L. & Robert J. Trent (2012)

8. . Risk Management: Welcome to new normal. Supply Chain Management Review, 16 (1):12 – 21. Simon, P., D. Hillson & K. Newland (1997).
9. Christopher, Martin, Carlos Mena, Omera Khan & Oznur Yurt (2011). Approaches to managing global sourcing risk. Supply Chain Management: An International Journal, 16 (2):67 – 81.
10. Connelly, Brian L., David J. Ketchen & G. Tomas M. Hult (2013). Global supply chain management: Towards a theoretically driven research agenda. Global Strategy Journal, 3:227 – 243.
11. Craighead, C.W., J. Blackhurst, M.J. Rungtusanatham & R.B. Handfield (2007). The severity of supply chain disruptions: design characteristics and mitigation capabilities. Decision Sciences, 38 (1):131 – 156.
12. Project Risk Analysis and Management Guide (PRAM). Association for Project Management, Norwich.
13. Sodhi, ManMohan S., Byung-Gak Son & Christopher S. Tang (2012). Researchers' perspectives on supply chain risk management.
14. Production and Operations Management, 21, (1):1 – 13. Son, Joong Y. & Ryan K. Orchard (2013).
15. Effectiveness of policies for mitigating supply disruptions. International Journal of Physical Distribution & Logistics Management, 43 (8):684 – 706.
16. Subramanian, Nachiappan, Shams Rahman & Muhammad D. Abdulrahman (2015). Sourcing complexity in the Chinese manufacturing sector: An assessment of intangible factors and contractual relationship strategies.
17. International Journal of Production Economics, 166:269 – 284. Tang, Christopher S. (2006). Perspectives in supply chain
18. https://www.toppr.com/guides/business-management-and-entrepreneurship/recent-trends-in-management/risk-management/
19. https://app.hedgeye.com/insights/25869-fedex-fails-to-approve-ups-tnt
20. https://theloadstar.com/analysis-deutsche-post-dhl-staying-optimistic-for-2016-but-caution-advised/

21. https://annualreport2016.dpdhl.com/report/group-management-report/report-on-economic-position/overall-board-of-management-assessment-of-the-economic-position
22. https://annualreport2016.dpdhl.com/report/group-management-report/non-financial-figures/brands
23. https://global.hitachi-solutions.com/blog/supply-chain-risk-management
24. https://broadleaf.com.au/resource-material/evaluating-the-effectiveness-of-risk-management/
25. https://www.corporatecomplianceinsights.com/improve-risk-management/
26. General books, articles and conference papers we have written or to which we have contributed
27. Endorsement: Chris Chapman, Enlightened Planning: Using Systematic Simplicity to Clarify Opportunity, Risk and Uncertainty for Much Better Management Decision Making June 2019
28. Foreword: David Hillson, Capturing Upside Risk: Finding and Managing Opportunities in Projects May 2019
29. Keynote presentation at the AURIMS Conference 2019 April 2019
30. Big risks in the tertiary sector September 2018
31. Complexity – What's new? September 2017
32. Book review: Grant Avery, Project Management, Denial and the Death Zone March 2016
33. Forward to World Class Risk Management June 2015
34. Hearing over the Cacophony: RiskNZ Keynote November 2014
35. Project Risk Management Guidelines August 2014
36. Unknown unknowns July 2014
37. Computer Systems Laboratory Bulletin. Threats to Computer Systems: An Overview. March 1994

38. NIST Interagency Reports 4749. Sample Statements of Work for Federal Computer Security Services: For Use In-House or Contracting Out. December 1991.
39. NIST Special Publication 800-12. An Introduction to Computer Security: The NIST Handbook. October 1995.
40. NIST Special Publication 800-14. Generally Accepted Principles and Practices for Securing Information Technology Systems. September 1996. Co-authored with Barbara Guttman. NIST Special Publication 800-18.
41. Guide For Developing Security Plans for Information Technology Systems.
42. December 1998. Co-authored with Federal Computer Security Managers' Forum Working Group.
43. NIST Special Publication 800-26, Security Self-Assessment Guide for Information Technology Systems. August 2001.
44. dpdhl.com/report/group-management-report/general-information/business-model-and-organisation
45. https://searchcompliance.techtarget.com/definition/risk-management
46. Simon, P., D. Hillson & K. Newland (1997). Project Risk Analysis and Management Guide (PRAM). Association for Project Management, Norwich.
47. 108 Sodhi, ManMohan S., Byung-Gak Son & Christopher S. Tang (2012). Researchers' perspectives on supply chain risk management.
48. Production and Operations Management, 21, (1):1 – 13. Son, Joong Y. & Ryan K. Orchard (2013). Effectiveness of policies for mitigating supply disruptions.
49. International Journal of Physical Distribution & Logistics Management, 43 (8):684 – 70

ANNEXES

The questionnaire

1. How does your company manage supply chain risk?
2. What risks could you mention that your company faces in the workplace?
3. What strategies / methods do you use in order to risk mitigation and what should be done in the future for its prevention?
4. What strategies should be implemented to avoid disruptions within a supply chain?
5. What do we need to face the situation?
6. Could you rank the following risk types in accordance with their importance from 1 to 5 where 1 is the most important and harmful, and 5 – the least: - Supply risk - Demand risk - Process risk - Risk of losing control under the supply chain - Environmental risk
7. Do you face various risks dealing with suppliers from Europe, Asia or Middle East? Which region has more uncertainties?
8. What strength, opportunity does DHL have?
9. What is the role of SWOT analysis as asupport tool for strategic management at DHL?
10. On the basis of the above main problem, for its solution - to answer it, she formulated three detailed problems: What is the role of the internal environment, especially its strengths and weaknesses, in the strategic management of DHL?
11. . What is the role of the external environment, mainly challenges and threats, in strategic management of DHL?3. What is the importance of the

relationship between internal and external factors in DHL's strategic management?

12..Risks comes in many different forms. By reviewing the risk priority matrix what risks have effected your organization most frequently?

13. What risk in your experience has caused a severe impact?

APPENDIX A-1 List of Examples, by Main Purpose.

Screening and Prevention 1. Screening for diminished visual acuity in children 2. Vaccination for pregnant women who are planning international travel
Diagnosis and Pre-Diagnosis Management of Patients 3. Triage of the injured patient 4. Evaluating chest pain in the emergency room 5. Using erythrocyte sedimentation rate tests in diagnosis
Indications for Use of Surgical Procedures 5. Indications for carotid endarterectomy 6. Indications for percutaneous transluminal coronary angiography 7. Managing labor and delivery after previous cesarean section
Appropriate Use of Specific Technologies and Tests as Part of Clinical Car Using autologous or donor blood for transfusions Detecting or tracking deteriorating metabolic acidosis

Guidelines for Care *of Clinical Conditions*

10. Using oral contraceptives to prevent pregnancy and manage fertility
11. Deciding on treatment for low back pain
12. Managing patients following coronary artery bypass graft
13. Guidelines for the management of patients with psoriasis
14. Acute dysuria in the adult female
15. Management of acute pain

Inclusion in this appendix does not imply endorsement of the content of these guidelines or of the process by which they were developed. Some of these materials are not, for example, the products of a systematic development process. Others may result from such a procedure but do not include references to the scientific literature used in development.

Appendix B : Fund Range

Diversified fund composition	DHL Diversified Growth fund (CPI + 4% per annum long-term performance target) 50% Future World Global Equity Index Fund 12.5% Heitman Global Prime Property Securities Fund – GBP Currency Hedged 1% GBP Corporate Bond AAA-AA-A Fund (Passive) 6.5% USD Corporate Bond AAA-AA-A Fund (Passive) – GBP Currency Hedged 2.5% EUR Corporate Bond AAA-AA-A Fund (Passive) – GBP Currency Hedged 5% Emerging Markets Passive Local Currency Government Bond Fund 5% Emerging Markets Passive USD Currency Government Bond Fund 5% High Yield Bond

	Fund 12.5% Infrastructure Equity MFG Fund – GBP Currency Hedged **DHL Diversified Cautious fund (CPI + 2% per annum long-term performance target)** 25% Future World Global Equity Index Fund 10% Heitman Global Prime Property Securities Fund – GBP Currency Hedged 2.5% GBP Corporate Bond AAA-AA-A Fund (Passive) 16.25% USD Corporate Bond AAA-AA-A Fund (Passive) – GBP Currency Hedged 6.25% EUR Corporate Bond AAA-AA-A Fund (Passive) – GBP Currency Hedged 5% Over 15 Year Gilts Index Fund 6% Emerging Markets Passive Local Currency Government Bond Fund 6% Emerging Markets Passive USD Currency Government Bond Fund 5% All Stocks Index-Linked Gilts Index Fund 8% High Yield Bond Fund 10% Infrastructure Equity MFG Fund – GBP Currency Hedged
Other Freestyle funds	DHL Global Equities fund DHL UK Equities fund DHL Emerging Markets Equities fund DHL Inflation-Linked Gilts fund DHL Fixed-Interest Bonds fund DHL UK Corporate Bonds fund DHL Global Property fund DHL Liquidity fund DHL Shariah Global Equities fund