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## **Abstract**

This report is a research report that examines the alignment of information security (IS) and business strategies in the Danish shipping company of Det Forende Dampskibs-Selskab (DFDS). I will first perform a thorough research of the topic, and then further research the case organisation including,

- Its business field,
- The company's history,
- Its use of information security and related communications infrastructures,
- Any issues, good or bad, they have had,
- And the company's approach to information security strategy.

I will perform a critical analysis of DFDS along with the case issues it has and its approach to strategies relating to IS and management.

### **Keywords**

- Information Security
  - confidentiality
  - integrity
  - availability
  - accountability
  - risk assessment
- Business Strategies
- DFDS (The Danish Shipping Company)
- DSV Group (Merger)
- Strategic Management
- Company Mergers
- IT/IS Systems
- European Union
- Strategical Objectives
- Entity Relationships
- Process Models

## **Chapter 1 – Introductory Topic Research**

### **Strategic Management**

*“Strategic management is the process of specifying an organization's objectives, developing policies and plans to achieve these objectives, and allocating resources so as to implement the plans. It is the highest level of managerial activity, usually performed by the company's Chief Executive Officer (CEO) and executive team. It provides overall direction to the whole enterprise.”<sup>1</sup>*

A good form of strategic management involves integrating the organisation's goals, policies, and tactics into a single business reality object. Strategic management is dynamic and one should note that the strategies used in organisations are merely theoretical, based on observations seen throughout the history, present and possible future of the organisation. Many times does an organisation fail despite having a good strategical management system because of that reason.

Business Strategies (BS) are defined to be a combination of *strategy formulation*, and *strategy implementation*, where *formulation* includes analysing situations and crafting objectives, and *implementation* includes assigning responsibilities to certain tasks, individuals, or groups.

There are two general approaches to strategic management and management in business strategies; *The Industrial Organisation Approach* – profit maximisation by dealing with resource allocation and competitive rivalry – and *The Sociological Approach* – dealing with human interaction. I will be lightly covering the industrial organisation approach, but will be concentrating on the sociological approach in the chapters ahead.

### **Information Security**

*“Information security deals with several different "trust" aspects of information and applies to all aspects of safeguarding or protecting information or data”<sup>2</sup>*

Information Security covers all the infrastructures that aids in the use of information, such as processes, technology, and in our case, management and strategies. The depth and level of IS should correspond and be in the same level as the importance of the data or information being secured, as well as the value and criticality in the loss of the data.

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1 Strategic Management Definition - [http://en.wikipedia.org/wiki/Strategic\\_management](http://en.wikipedia.org/wiki/Strategic_management)

2 Information Security - [http://en.wikipedia.org/wiki/Information\\_security](http://en.wikipedia.org/wiki/Information_security)

## The Alignment of both sub-topics



Having a strategy for information security in IT is essential for an organisation that wishes to advance in its position and power. For that to be done, a strategic goal needs to be set by the management of the business, through – for example – the use of a planning life cycle as shown above<sup>3</sup>. Analysis of the information, its value, and security level is needed first. Then and only then the solution can begin to be designed, implemented, and tested. All that will be needed afterwards is the maintenance and modification if necessary. When such an implementation is used, aligning information security in business strategies can provide several advantages and improvements to an organisation<sup>4</sup>.

- The company will have something unique, that no other company has, or it will focus on the matter and perform it better than other companies.
- The company can hence build secure supply and service chains, establishing relationships of trust with the customers or passengers.
- The company can build brand equity and a good reputation. It is better to build it through such means rather than spend a fortune on marketing and advertising.
- “*Information systems leverage stability*”. Along with information systems, security is a key factor in stability of the organisation.

<sup>3</sup> Diagram Reference - <http://en.wikipedia.org/wiki/Image:BCPLifecycle.gif>

<sup>4</sup> List quoted and referenced from - [http://en.wikipedia.org/wiki/Management\\_information\\_system](http://en.wikipedia.org/wiki/Management_information_system)

## **Chapter 2 – A dissection of the company's infrastructure**

### **Det Forende Dampskibs-Selskab (DFDS)**

#### What is DFDS?

DFDS Is a Danish shipping company, originally and initially managed by Carl Frederik in 1866. It is the largest and oldest Danish shipping company. In September 2000, the DSV Group took over DFDS Dan Transport Group A/S, in order to strengthen their current position in the market, as well as to expand globally, becoming a leading transport company for passengers and materials.

Currently, DFDS initiates in activities around *“Nowadays DFDS' activities revolve around the North European markets for sea transport of passengers and freight, including 21 routes, 22 sales companies, ownership and operation of 30 ships and deployment of approximately 32 chartered vessels.”*<sup>5</sup>

#### History of DFDS

DFDS was formed in 1866, resulting from a merger of several minor shipping companies in Denmark. The lead manager then was Carl Frederik Tietgen. Since then, it has provided the services in passenger and material transportation throughout Europe, and in this century, it has grown into a major organisation in its field.

With the introduction of Information Technology, Information Systems, and modern strategic management, technology has advanced greatly and the company adapted and merged its organisation into such technology, developing and strengthening it in many fields including the alignment of information security and business strategies.

The following are eleven points gathered from DFDS' website<sup>6</sup> that give a quick explanation of the organisation's history from this year, dating back to 1866,

1. In 1866 a few small Danish shipping companies merged to form the oldest large shipping company in Denmark: DFDS, "Det Forende Dampskibs-Selskab" (The United Steamship Company).
2. In 1976 DSV was established by 10 independent carriers and initially their focus remained within contracting haulage and deliveries.
3. In 1987 DSV was listed on the Copenhagen Stock Exchange.
4. During the following 10 years a number of carriers and transportation companies were acquired.
5. In 1997 DSV acquired Samson Transport A/S following a number of acquisitions of carriers and transportation groups during the previous 10 years.

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5 Identification – <http://dfds.com/DFDSGROUP/EN/Presentation/>

6 History quoted from - <http://dfds.com/DFDSGROUP/EN/Presentation/History/Milestones/>

6. In 2000 DSV acquired the former DFDS Dan Transport Group A/S.
7. DSV's activities within transport and logistics continue under the name of DFDS Transport.
8. Today, the DSV A/S group of companies is Denmark's largest and leading supplier of transportation and logistics services.
9. It is a financially sound company, growing nicely, because through all the years of its existence, it has understood how to adapt its business idea - or philosophy - when necessary. DFDS is still sailing on some of the same routes begun in the 1800s.
10. In 2002 (1. January) the DSV Group was demerged into four stand-alone divisions: DFDS Transport A/S (Road), DFDS Transport Air & Sea Holding A/S, DFDS Transport Logistics A/S, and DSV Environment.
11. Established in 30 countries across Europe, North America and the Far East the DSV A/S group of companies and its 10,000 employees reached a turnover of € 2.4 billion in 2003.

### Objectives

*“DFDS aims to expand its position as a leading passenger and freight liner shipping company in Northern Europe.”<sup>7</sup>*

Besides being a 'business-to-customer' (B2C) organisation, DFDS is also 'business-to-business' (B2B) oriented. This advantage allows for more attention to be put into the enhancement and improvement of solutions related to the Information Security aspect of their Information Technology field. Hence, security is tightened, information is kept where it belongs – secure and protected – and henceforward problems are reduced.

### DFDS business strategy<sup>8</sup>

The following are key elements of DFDS' strategy plan. As any other organisation, it thrives to produce the best of quality service by establishing and maintaining a few key goals to follow.

- **Focus on transport of passengers and freight by sea:** combined overnight passenger and freight liner shipping, and freight liner shipping based primarily on “ro-ro” liner shipping.
- **Geographic focus:** Northern Europe.
- **DFDS' market position:** must continually be strengthened through organic growth, company acquisitions and alliances
- **Customer concepts:** in the passenger market a balance is sought between on board concepts and activities on the one hand, and customer target groups on the other. In the freight market a balance is sought between freight forwarding customers and industrial logistics customers. Tonnage deployment on all routes is subject to continuous assessment in order to optimize customer service and cost efficiency.

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<sup>7</sup> Objectives – <http://dfds.com/DFDSGROUP/EN/Presentation/BoardOfDirectors/>

<sup>8</sup> Business Strategies quoted from - <http://dfds.com/DFDSGROUP/EN/Presentation/BusinessStrategy/>

- **The DFDS Fleet:**

The average age and ownership share must be reduced over time in order to increase productivity and flexibility and reduce costs:

- Passenger fleet: average age approximately 20 years, ownership share approximately 80%.
- Freight fleet: average age approximately 10 years, ownership share approximately 50%.

- **Financial goals:**

It is DFDS' short-term goal to achieve an average return on the book value of invested capital that as a minimum corresponds to DFDS' estimated cost of capital of 6.9% after tax.

In the longer term, it is DFDS' clear ambition to achieve a level of return that exceeds the cost of capital.

## **Chapter 3 – Analysis of case issues**

### **Case Issue – The Merger**

In September 2000, The *De Sammensluttede Vognmaend Group*<sup>9</sup> (DSV Group) - Denmark's and one of Northern Europe's current largest transport group<sup>10</sup> – took over *DFDS Dan Transport Group A/S*. The purpose of the takeover was to strengthen their position in the market and to become the leading transport company.

There are some major problems that have been created because of this merger, such as job loss, which has created low morale; bad spending and management has caused large short- and long-term debt; acquisitions and mergers to gain market share have made cost margins to become so narrow, that assets are sold (with considerable losses) to create income. This has a huge effect on information security. Your employees make your business. So if the employees lose trust in DFDS, their efficiency could drop due to the lack of motivation, no popper team work, and so on. If there is a low moral, there could be room for information theft, unauthorised modification, tampering, or leaking information out of DFDS into a rival organisation.

Due to the major problems mentioned, new strategies need to be applied in order to strengthen the security, performance, efficiency, and survival of DFDS. In the next page is a SWOT analyses created and conducted based on the problems and situation found in the market, that aids in organising and securing the strategies applied.

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9 For More Information – Yahoo Finance - <http://uk.finance.yahoo.com/q/pr?s=DSV.CO>

10 DSV - [http://www.accenture.com/xd/xd.asp?it=enweb&xd=\\_dyn%5Cdynamicpressrelease\\_713.xml](http://www.accenture.com/xd/xd.asp?it=enweb&xd=_dyn%5Cdynamicpressrelease_713.xml)

**SWOT / Strengths, Weaknesses, Opportunities & Threats**

<p><b>Strengths - <i>What strengths does the company have?</i></b></p> <ul style="list-style-type: none"> <li>• The company is well known. It has been established since 1866, and is the largest and oldest leading company in Denmark for shipping passengers and materials all over the world.</li> <li>• The company adopted a social charter that expressed the social responsibility of the company toward its customers and employees.</li> <li>• The company emphasises a strong alignment of information security and business strategies</li> <li>• Effective resource management</li> <li>• Local/worldwide company</li> <li>• International network (management)</li> <li>• Good at handling competition</li> </ul>	<p><b>Weaknesses - <i>What examples of weaknesses can a consultant see?</i></b></p> <ul style="list-style-type: none"> <li>• Once people penetrate to top decision making roles in an organisation such as this one, they are usually no longer “young”, and their values are set. Older people are less sensitive to value shifts in their environment than younger ones. This can cause a bottleneck in moving forward and introducing new ideas and risks.</li> <li>• Personnel management</li> <li>• Shortage of trained IT persons</li> <li>• Unclear image</li> <li>• Mixing person/good transportation</li> <li>• Poorly designed website</li> <li>• Old IT systems</li> </ul>
<p><b>Opportunities - <i>What opportunities does the company have to further its success and reduce complications ?</i></b></p> <ul style="list-style-type: none"> <li>• Most importantly, learn from their mistakes.             <ul style="list-style-type: none"> <li>○ Establish good international relations (EU).</li> <li>○ Know how to handle any other situations in an appropriate manner, including research, risk analysis, decision making, etc..</li> </ul> </li> <li>• Transportation section growing</li> <li>• New technology</li> <li>• Globalization/expansion of EU</li> </ul>	<p><b>Threats - <i>What threats did the company have?</i></b></p> <ul style="list-style-type: none"> <li>• Penetration of their Information Security Mechanism.</li> <li>• Gas prices go up</li> <li>• Air freight</li> <li>• Terror organizations</li> <li>• Pollution.</li> <li>• (similar to the weakness) lack of 'young blood' in the top decision making, hence lack of new ideas, and a slow forward movement.</li> <li>• The total loss of the company, either in terms of management (no longer owned or controlled), or as a whole (shut down).</li> </ul>

From the SWOT analysis above, we can see which weaknesses should be worked on to improve the performance of the company in connection to the opportunities and threats in the information system and information security aspects of the market.

## **Case Issue – DFDS' New IT system**

DFDS uses their Information Technology (IT) systems to utilise the commercial conditions of the market, as well as to offer the customers overall logistical solutions at competitive prices. They have already started the process of updating their information security system over 3 years ago, adapting a monitoring program that allows truck tracking and EDP booking, and a global base for knowledge.

Most of the problems DFDS have rely with poor strategical management, particularly with the internal communication between employees and management, which lowers their efficiency. The information being exchanged was not quick enough, neither has it been exchanged efficiently or securely. Similarly, the data warehouse must be improved, for the current system is not efficient enough and very expensive to run.

DFDS has an increasing problem in updating and handling their IT and IS systems. In today's world, with growing technology, increase in data integrity, value, and security, information security, and constantly increasing customer expectations, it is a very big weakness for such a huge company to have old and insecure IS systems being run.

To eradicate such an issue, a few techniques need to be used. The overview on products and services available on the market should be conducted and the best or most suitable should be chosen and implemented. Also, the IT/IS department may take it into their own hands to do the job themselves, but it would be more appropriate to lease an IT/IS company to implement the new technologies and systems. That way, new ideas can pop up, and as they say, the company would be 'thinking and working *outside the box*'. Furthermore, a proper employee training system should proceed to avoid problems in the future.

Hence, the implementation and upgrading of the IT and IS systems – through the use of efficient business strategies such as those mentioned above – will allow for several breakthroughs, of which may include,

- Meet growing customer expectations.
- Better database/ orders / customer handling.
- Better overall alignment and integration of their information security and business strategies.
- Quicker operations.
- An increase in security, efficiency, and data integrity.
- Money save in the long run, and cost savings.
- Up to date.
- Competitive advantage.
- Better work place and hence improved working environment.
- Motivated employees and satisfied customers.

## **Case Issue - Expansion of EU and the opportunities for DFDS**

This is an example of a successful case issue, where the transportation conditions are improved in certain EU countries. As a result, more and more highways are being constructed for more accessible and easier crossing of borders. This will bring more and more business for DFDS group.

Looking at it the other way, DFDS itself itself brings more business to the European Union. Due to the merger, and the lack of 'borders' (information wise and physical), the main infrastructures of the EU countries will be integrated into the *Trans-European* transport network. Also, due to the organisation's reliance on information security, technology, and properly trained EU employees, DFDS obtains a very strong share in the economic development, and aids in the development of the European Union's market too.

There are two views to the security of information in this matter. The expansion of the EU and eradication of the borders allows for a wider range of culture, mind, and thinking to coexist. Instead of limiting employment to those in Denmark, DFDS now has a wide thinking mind that would tackle security in more than one angle. Data protection laws in EU are also enforced with all the countries that join it. so if countries join, they have to follow it. Finally, economical aspects (EU Law 2003, p. 701 706-11), and laws such as equal pay (EU Law 2003, p.846-7) and treatment (EU Law 2003, p.737, 742-3) will raise employee moral, and hence the level of trust is brought back.

The Data Protection Act (DPA) is also used throughout the EU protecting companies and their private data; and the bigger the expansion, the greater the range. On the other hand, such laws could be exploited. For example, criminal records will be protected in the whole EU, which could be a problem when it comes to information security.

## **Chapter 4 – Selective Business Strategies**

### **Personnel Strategy**

#### The present situation

DFDS has chosen to focus on the human capital of the organisation – *the employees*. One of the company's goals has been issuing the working environment policy, which is still in progress. However, in February 2004, the merging with of DFDS with DSV resulted in repetitive job losses as well as the selling of DFDS Environment divisions in order to cover the debts it had. This managerial mistake created an insecure working environment, which can eventually lead to a low morale in the company.

The investigation henceforth shows that the employees of DFDS are relatively satisfied on the overall basis. However, it also suggests increasing focus between the management and the employees.

#### Strategical Objectives

- To keep personnel motivated.
- To create a better working environment.
- To meet employees' expectations.
- To attract and maintain qualified personnel.
- To integrate personnel.
- To delegate responsibility.
- To create secure working environment.
- To ensure the security of information in IT as a result of all of the above.

#### Strategy for the Human Resource department

Many companies such as British Airways<sup>11</sup> and The Body Shop<sup>12</sup> value the relationship with the employees over for customer.

*“Your employees make your business! They can fulfil your business ideas, but they also can destroy them.”<sup>13</sup>*

It is important to work in a well functioning service area. When service doesn't satisfy a client, he/she goes to another company. A company which does not show much interest to its personnel does not get much in return. Eventually, each lost employee and replacement with a new one costs the company a great amount of money, time, and effort.

DFDS should look ahead and develop a long-term personnel strategy to ensure survival of the company, maintain the employees and keep them a motivated working environment.

- To ensure motivated and reliable personnel, DFDS could offer different training courses to its personnel, such as team building courses, where every employee gains better knowledge in

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11 British Airways - <http://www.britishairways.com/>

12 The Body Shop - <http://www.uk.thebodyshop.com/web/tbsuk>

13 Quote – Philip Kotler, Principles Of Marketing. (see references).

planning, problem solving, decision making and effective communication. This guarantees more independent and reliable personnel for the management;

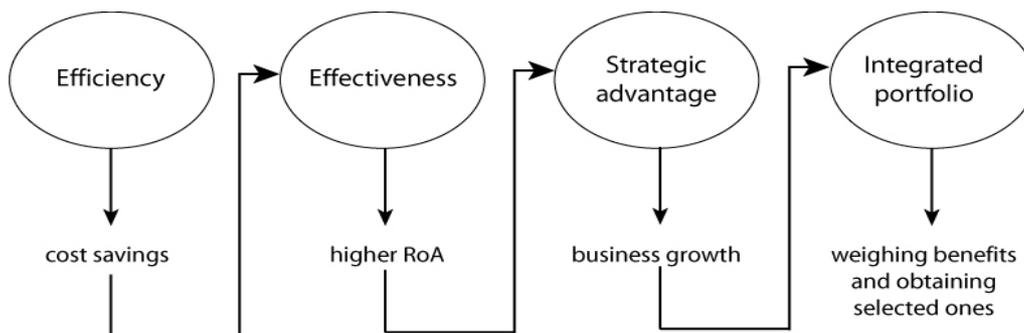
- During a crisis, such as breach of information security, selling passenger ships with a great loss or environment division due debts, DFDS could consider finding a compromise with their employees instead of firing them. Cutting costs in areas such as employees working temporary longer hours for less pay, or sacrificing some benefits – although may sound crude or mean - would at least prevent them from losing their jobs.
- To ensure efficient and reliable cooperation with the customers, the personnel must be aware that they are not working only for the management and company, but also for the customers themselves. A good strategy by the managers is to keep their workers motivated by meeting their expectations and rewarding fresh ideas such as better customer service, improved working environments, etc.

### **Management Strategy**

One business strategy mentioned in the SWOT analyses diagram to improve the management is to circulate management every 5 years. Similarly, it is very efficient to have a board of management with different backgrounds and opinions, therefore the organisation will have a more wider range of thought, creativity, and overall business strategies. Also mentioned is the hiring of younger managers that may have fresh ideas, and be more open for flexible changes.

### **Information Security & Information Technology Strategies**

As mentioned in the 'Alignment of both sub-topics', an IS/IT strategy is needed to ensure security, easy maintenance, expandability, and efficiency. The diagram below is an example of the evolution of planning that is similar to Ward's three-eras model (S.M. Of IS 1997, p.112).



(Planning IT: Creating An Information Management Strategy 1991, cited in Strategic Management of IS 1997, p.183)

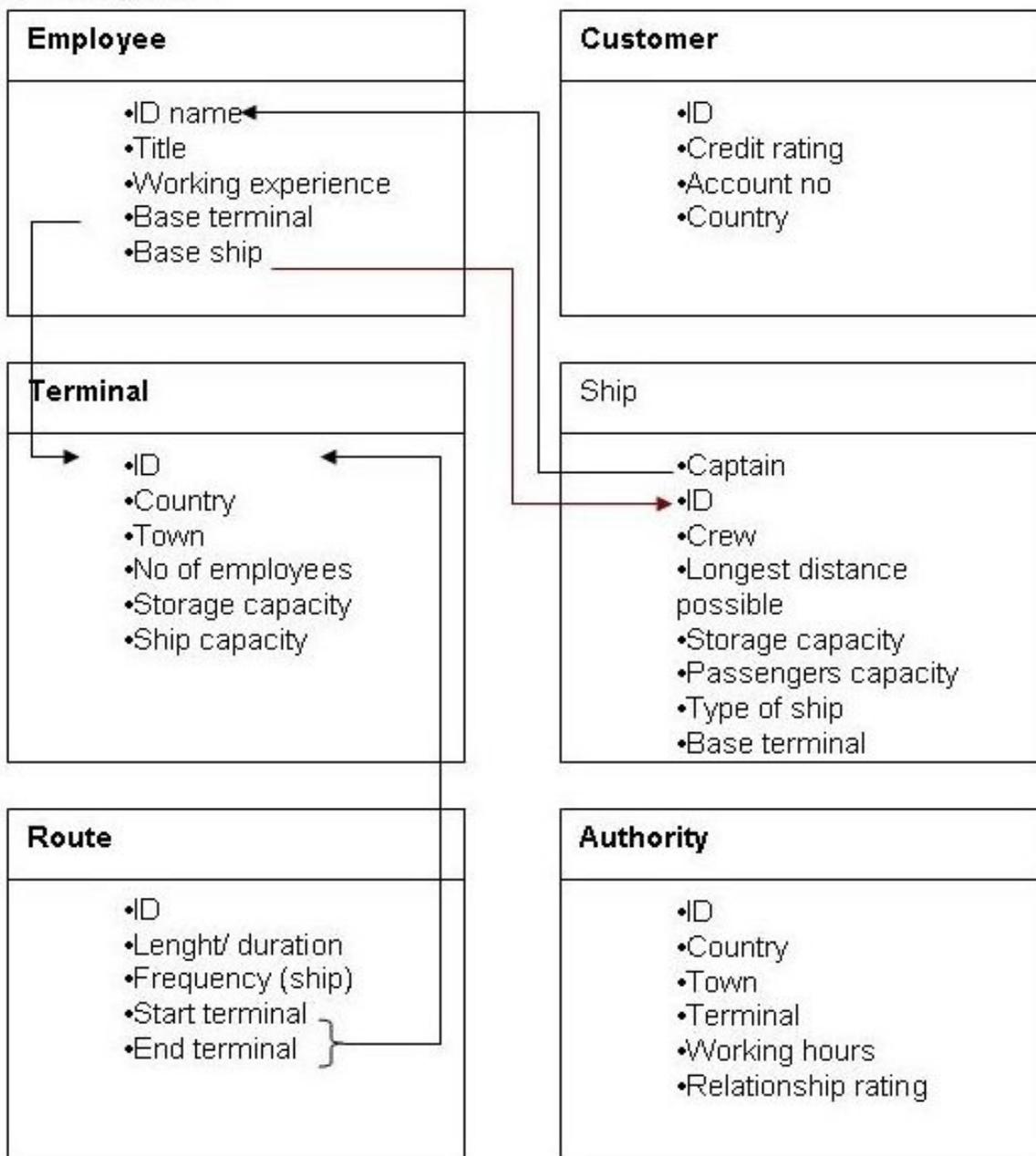
After following the plans and goals, an entity relationship diagram can be created that shows a database where information should be stored. An example is shown in the next page.

Entities & Entity Diagram

Employees	Customers	Office location
Terminal	Ship	Truck
A route	Cargo	Authority (i.e. border guard)
Suppliers		

Entity relationship diagram

An organised and secure manner of collecting and storing data.



Process Model – What actions affect which entities ?

What actions affect which entities, and hence, what do you do in a database? Below is a Process Model that shows the actions happening when a transaction occurs. For example, when an employee is fired, the Employee field is deleted (D), and the Terminal field is updated (U).

Function – process model

	Employee	Customer	Terminal	Ship	Route	Authority	Cargo
Buy ship	-	-	-	C	-	-	-
Evaluate employee	U	-	-	-	-	-	-
Maintain terminal	R	-	U	-	-	-	-
Ship arrival	R	-	U	U	U	R	-
Ship departure	R	-	U	U	U	R	-
Load cargo	R	-	U	U	-	R	U
Unload cargo	R	-	U	U	-	R	U
Fire an employee	D	-	U	-	-	-	-

- C – create
- R – read
- U – update
- D - delete

X axis = entities  
 Y axis = actions

## Chapter 5 – Further Security Issues

### Socio-psychological Issues in Information Security

Three forces can be seen in the company that show both social and psychological effects,

- Trust
- Organisational Control
- Social Environment.

All three should be hypothetically independent from one another, but the restriction of information sharing within an organisation is the sum of them. Similarly, I should also note that three basic assumption groups exist in this scenario, where a group in the eyes of Wilfred R. Bion<sup>14</sup>, is a number of individuals that share a common objective,

- Fight-or-Flight – two opposing groups where one side would fight and another side would flee.
- Dependency – a group depending on a leader, or another group. (trust).
- Pairing – two groups paired together by certain similarities.

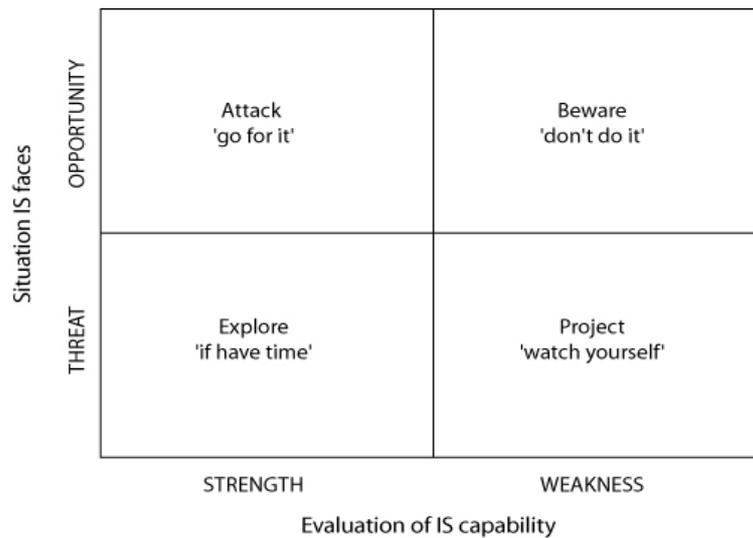
When analysing the risks mentioned in the SWOT analysis shown in p.9, a response diagram<sup>15</sup> shown in the next page can be created that shows all the possible responses the organisation could take depending on the situation at hand. The diagram shows the four different types of risk exposures created by the combinations of *external* and *internal* factors.

- When both *opportunities* and *strengths* are present, the organisation is in a position to **attack** through the use of IS with a **good** prospect of success.
- When *threats* are faced where there are *weak* capabilities, the organisation must take steps to **protect** itself.
- When there are *opportunities* with *weak* IS capabilities, the organisation should **beware** of their continuation, since they are less assured of success.
- When the organisation has a *strong* IS infrastructure but is under *threat*, it should **explore** possibilities and **expand** their opportunities.

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14 For more information, visit <http://mythosandlogos.com/Bion.html>

15 Diagram – (Planning IT: Creating An Information Management Strategy 1991, cited in Strategic Management of IS 1997, p.183)



(Information Technology: A Strategic Opportunity 1984, cited in Strategic Management of IS 1997, p.119)

## Trust

Trust is “*the phenomenon that occurs between parties at the individual and organisational level. It is a part of the social interaction*”<sup>16</sup>. For one party or organisation, in this case, DFDS, to trust another, a certain amount of risk is needed and should be taken for the trust to occur. Certain members of management at DFDS did not have enough trust to take the risks introduced by the merging of their various minor shipping companies. There was both a lack of trust between the managers themselves and DSV, and a “fight-or-flight” characteristic for the management where they chose to rather 'fly' or flee away from the situations rather than to 'fight' their way to righteousness.

*“Recent trends in restructuring and downsizing of organizations have caused the redefining of traditional roles. Individuals that once had a well defined role found a great deal of certainty in relating to their hierarchical position within the social context of their organization. Innovative movements by organizations to empower individuals have interjected a great deal of role ambiguity which causes a feeling of uncertainty.”*<sup>17</sup>

In the management's eyes, they however had full trust in their 'leader of the industry', and in turn formed a dependence as would a group depend on their omnipotent leader to fully take care of them and their surroundings.

16 Centurion Sys - <http://www.centurionsys.com/rtcl56.html>

17 Centurion Systems – Social Environment - <http://www.centurionsys.com/rtcl56.html>

## **Chapter 6 – Concluding Analysis**

Today's world offers plenty of opportunities for a transportation company to grow and to become international. With improvements in their internal affairs – management, employee satisfaction, IT department, security policies) and with the right strategies and money invested into information security, information system technologies, and business strategies, the company can become very efficient and offer a lot for a little.

To quote Manfred de Vries & Danny Miller,

*"Managers have to concern themselves with the ways in which organizational priorities must adapt to changing conditions. These adaptations have a pervasive influence throughout the organization and take place on intrapersonal, interpersonal, group and organizational levels. Effective change requires that all these levels be taken into consideration"*

The managers have a responsibility to adapt to changes that occur in an organisation. In order for that to happen, the managers should first have the ability to witness these changes, and use appropriate steps in order to ease the transition.

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