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Program: MSc Business Administration

(Readiness for) e-learning implementation in a large transportation company

Results of design-oriented research

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PREFACE

This research was carried out in commission of Heisterkamp Transport B.V., hereafter abbreviated to Heisterkamp, and functions as my master thesis for the (Msc) Business Administration programme, offered by the University of Twente. This thesis at the same time is the last necessary component to graduate from the earlier mentioned University of Twente.

The research reports findings from the past seven months, where the aim was to develop guidelines for e-learning implementation. Academic and practical orientation intertwine, as contextual (organizational) topics received reflection based on fixed theoretical criteria, while also appropriate theory was added where context demanded. Indeed, both theory and practice turned out to complement each other in this research. I've learned that even widely used theory, developed to support practical intentions, can ironically fall short in supporting those same practical intentions, due to contextual implications. I also would like to believe this research provided a boost for my own personal research skills and way of thinking, and might hopefully prove to be a considerable step towards a potential second master education.

Along these lines I would like to thank Heisterkamp as a whole, as they provided full cooperation and openness needed to efficiently execute this research. My thanks go out to the human resource department and the planning department, where I resided the past seven months. Also, special thanks go out to my external and internal tutors, Marieke Heisterkamp and Prof.dr. Tanya Bondarouk respectively, and second reader dr. Matthias de Visser. Last but certainly not least I would like to thank friends and family for their moral support.

In the end, I would like to thank everyone who takes the effort to read, and hopefully enjoy, this research.

Oldenzaal, October 2014
- Tom Siers

INTRODUCTION

SETTING THE STAGE

The internationally operating (Europe) transportation company central in this study, referred to as Heisterkamp, provides services in the areas of trailer trucking, truck rental and leasing, trailer rental and leasing, truck and trailer service, used trucks and commercial vehicles. Heisterkamp is a large company, given a personnel file of over 1.600 employees. The company experienced an unanticipated situation in which the skill-level of truck drivers, i.e. technical and social skills, was regarded to be insufficient, according to the assessment by the management team. That situation was regarded to be problematic, because both customer satisfaction and organizational quality suffered from such insufficiency. The image of the organization for a large part depends on competences of its truck drivers, as evaluation of a service firm often depends on evaluation of the 'service encounter' or the period of time when a consumer interacts directly with the firm (Bitner, 1990). As a result, Heisterkamp's reputation might be negatively influenced by low performance of its truck drivers. The management team of Heisterkamp believed the problem originated from an earlier period of organizational growth. In a short period of time, many new truck drivers were contracted in order to keep up with the increasing transportation demands. However, the organizations criteria and demands for new truck drivers were not enforced up to previous organizational standards. A declining number of work-seeking truck drivers also made it difficult for the company to cope with the increasing transportation demands, whilst still enforcing the companies standards and criteria for truck-driver capabilities. This combination of increasing transportation demands, versus new truck driver scarcity resulted in an unwanted performance-decrease of Heisterkamp's truck drivers, and thus the entire organization. Implementing HRM strategies like training and education seemed to be a logical step to negate the insufficient employee skill-level. However, training and educating Heisterkamp's truck drivers posed several problems on the practical level, as these truck drivers are geographically dispersed over numerous countries in Europe. Organizing central trainings for these employees was regarded to be financially inefficient, plus the geographical spread of the truck-drives brought lingual, cultural and social differences according to the management team. Heisterkamp showed interest stepping into the area of corporate e-learning in order to increase employee performance without having to organize costly traditional courses on central locations throughout Europe. However, actual initiative towards implementation was postponed due to lack of knowledge on how to successfully implement e-learning in the organisation. *The described situation has inspired this study, that aim was to develop guidelines for e-learning implementation, in commission of Heisterkamp.*

E-LEARNING DEFINED

In its broad definition, the concept of e-learning includes instruction delivered via all electronic media including the Internet, intranets, extranets, satellite broadcasts, audio/video tape, interactive TV, and CD-ROM (Govindasamy, 2001). In this study, e-learning is viewed as instructions delivered, enabled or mediated by electronic technology for the explicit purpose of training in organizations. It does not include stand-alone, technology-based training such as the use of CD-ROMs in isolation (CIPD, 2010). The use of e-learning in organizations and institutions has shown an increasing usage during the last decade (Sun, Tsai, Finger, Chen, & Yeh, 2008; Johnson, Hornik, & Salas, 2008; DeRouin, Fritzsche, & Salas, 2005). Indeed, successful implementation of e-learning is promised to reap

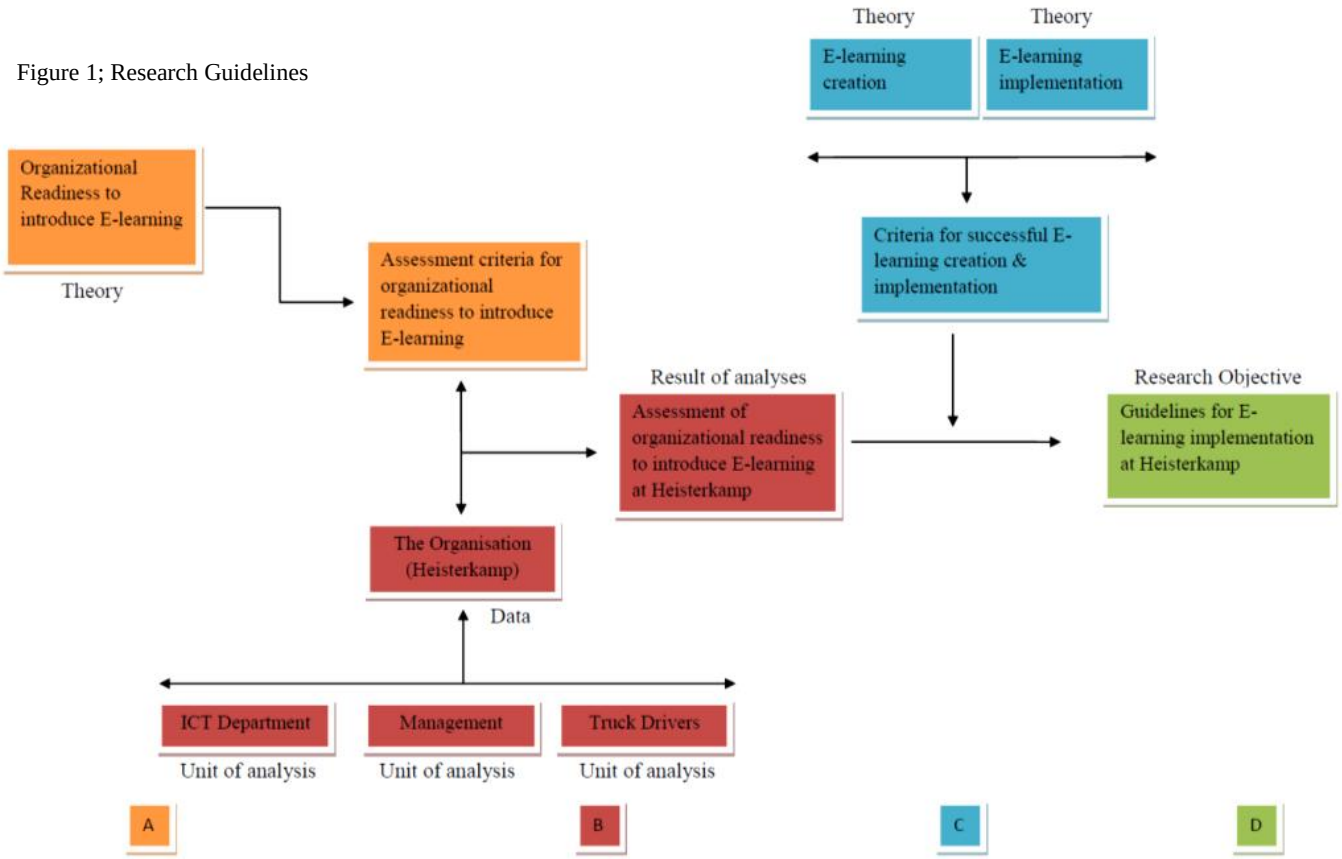
organizational benefits like the ability to deliver a consistent message companywide to all trainees or employees; the training of more people, more often, in short learning sessions that are easier to schedule and coordinate; a high rate of course completion and knowledge retention; a reduction in travel costs and more productive use of time previously spent in travel (Burgess & Russell, 2003). However, the successful adoption of information and communication technology to enhance learning is also known as very challenging, requiring a complex blend of technological, pedagogical and organizational components, which may at times require the resolution of contradictory demands and conflicting needs (McPherson & Nunest, 2008). As with any large-scale organizational initiative, e-learning indeed has its serious implementation hurdles, and a logical starting point is assessing the readiness of the organization to introduce e-learning (Haney, 2002). Thus, the concept of organizational readiness functioned as the starting point of this study, where organizational readiness refers to organizational members' change commitment and change efficacy to implement organizational change, as well as organizational readiness for change in more structural terms, emphasizing the organization's financial, material, human, and informational resources (Weiner, 2009).

RESEARCH GUIDELINES

Research guidelines (Figure 1; Research Guidelines) were developed to guide this project. The objective of this project, executed in commission of Heisterkamp, is to come up with guidelines to successfully implement e-learning in the organization (D). This is done by assessing criteria for successful e-learning creation & implementation (C), combined with an assessment of the organizational readiness for e-learning (B). The assessment of the organizational readiness for e-learning at Heisterkamp will be delivered by consulting organizational readiness for e-learning theory (A) and data retrieved from Heisterkamp. Central questions were developed based on the method of subdividing the research framework into identifiable components that make up the whole research framework (Doorewaard & Verschuren, 1999, p. 72):

i. *What are the criteria for assessing*

Figure 1; Research Guidelines



organizational readiness to introduce e-learning?

ii. *What is the organizational readiness to introduce e-learning at Heisterkamp, studied in view of the assessment criteria ?*

iii. *What are criteria for successful e-learning creation and implementation, not covered by organizational readiness to e-learning theory?*

iv. *What are the necessary steps to implement e-learning at Heisterkamp, studied in view of the criteria for successful e-learning creation & implementation, and Heisterkamp's organizational readiness for e-learning?*

Central theories and concepts that were studied to successfully execute the project were extracted from scientific journals on the area of organizational readiness, specifically organizational readiness to introduce e-learning; and the scientific area of e-learning creation & implementation. Data necessary for the assessment of the organizational readiness to introduce e-learning at Heisterkamp was gained by consulting company stakeholders like the management, ICT department, HRM department and truck drivers (employees).

This research makes several practical and theoretical contributions. Theoretical contributions are made by adding theories to complement the scientific area of organizational readiness to introduce e-learning. Researchers have tried to combine all criteria into one theoretical model, however more theories were needed outside the already suggested criteria in order to come up with successful guidelines for e-learning implementation. Practical contributions are the developed guidelines for Heisterkamp's in order to fulfill their organizational intentions towards e-learning implementation.

PROBLEM DEFINITION: PRELIMINARY INTERVIEW RESULTS

Preliminary interviews were conducted in order to get a clear problem definition. The interviews were based on the dramaturgical model (Myers & Newman, 2006), which proposes a useful way of conceptualizing the qualitative interview. The qualitative nature of the research also implies that the interviews are not over-prepared, making use of an incomplete script to stimulate openness, flexibility and improvisation (Myers & Newman, 2006). The sample of interviewees consisted of employees and managers of Heisterkamp, active in different organizational areas/disciplines. The whole board of directors was also represented in the interviewee sample, as shown in Table 1. Seeing the interviews, and their outcomes, required interpretation from the researchers side, a check-up was done with every interviewee to make sure the interpretation of the data was in line with the interviewees' thoughts.

The obtained information functioned as a scope for the e-learning readiness assessment and the e-learning implementation theory, by deriving assumed/expected problem areas for the whole project (e-learning implementation), as seen by the interviewees.

Date	Time	Location	Duration	Age	Occupation at Heisterkamp
22-04	11.00 am	Heisterkamp	21 minutes	39	Manager Driver Planning / Wage Calculation / Claims
23-04	14.00 am	Heisterkamp	20 minutes	35	HRM Specialist
24-04	08.30 am	Heisterkamp	29 minutes	UD	Manager ICT
24-04	10.30 am	Heisterkamp	23 minutes	48	Chief Financial Officer
01-05	08.30 am	Heisterkamp	28 minutes	52	Chief Operating / Commercial Officer
07-05	10.00 am	Heisterkamp	45 minutes	UD	Legal, Risk & Quality Management
08-05	10.30 am	Heisterkamp	28 minutes	37	Chief Executive Officer
14-05	08.30 am	Heisterkamp	34 minutes	42	Manager Sales

Table 1; Interviewee sample

interviewee does not correspond with the order listed in table 1. This was done to ensure interviewee anonymity, as commissioned by Heisterkamp.

The outcomes of the preliminary interviews can be found below.

LACK OF KNOWLEDGE AND EXPERIENCE

All interviewees regarded the e-learning initiative as a big, complex project. Creating, implementing and maintaining an e-learning system was assumed by the interviewees to require certain levels of knowledge, capacity, time, and financial means for successfully realization.

However, most of the interviewees had serious doubts if the needed level of knowledge and competences was present within the organization. This doubt, regarding level of knowledge and competences, was expressed by the interviewees for both truck drivers and office personnel. Interviewees mentioned that the overall level of automation should increase drastically in order to get to an organizational level where Heisterkamp could survive. Furthermore, employee skills were regarded as not aligned and not very impressive, due to low standards in recruitment and selection. Also, interviewees assumed that lack of affinity with ICT, among both truck drivers and office personnel, could serve as a potential threat to the e-learning project.

What's more, questions were raised whether the HRM department of Heisterkamp possessed the relevant knowledge and capabilities to maintain an e-learning system and create relevant educational/training programs. Most of the interviewees assumed the skills and competences of the HRM department to be sufficient, but added that they did not know this for certain;

> "*Time will tell if our HRM department has the skills and competences to actually create educational programs and transfer valuable knowledge*" - Interviewee 3

ORGANIZATIONAL RESISTANCE TOWARDS CHANGE

Some interviewees predicted a significant level of resistance among employees of Heisterkamp towards change. Many stated that the old-fashioned nature of the organization poses a threat/barrier towards organizational innovativeness and organizational flexibility:

> "*Changes are difficult to implement within Heisterkamp, due to cultural and general human factors. People tend to be satisfied and rely on how it is, and this has also to do with the change-capacity of individual employees*" - Interviewee 8

> "*The organization as a whole tends to be inflexible, as Heisterkamp is an old company with many of the activities originating several years back*" - Interviewee 3

> "*The human factor is the biggest risk in my opinion, as change is hard to achieve due to resistance*" - Interviewee 5

END-USER RESISTANCE TOWARDS E-LEARNING

From the interviews, it became clear that the previously mentioned resistance towards change certainly applied for the end-users of the e-learning system. Every interviewee expected the truck drivers to dislike non-practical information, and learning programs in general, for that matter:

> "*Resistance of the truck drivers is a point of interest that needs dealing with, as they did not become truck*

> *driver in order to receive schooling and theory*" - Interviewee 2

> "*What are we going to do if the truck drivers are not going to use the system, when they simply do not care, or do not want to use the system*?" - Interviewee 2

> "*I think, in general, truck drivers would want learning programs to be over as soon as possible, i.e. not be very interested*" - Interviewee 7

The interviewees stated that an e-learning system will only work if the intended end-users actually would use the system. Specific methods to increase extrinsic motivation were mentioned by some of the interviewees, like financial rewards, contractual obligations, and psychological rewards. However, none of the previously mentioned methods gained unanimous support.

FINANCIAL IMPLICATIONS

Interviewee opinions were divided on the subject of financial implications an e-learning system would have in terms of budget and investments. Especially the board of directors expected costs to be the biggest bottleneck of the whole project, in contrary to the other interviewees, who did not see costs to have that much of an impact. The mentioned financial threats concern both (direct) initial system creation and distribution costs, as well as (indirect) costs regarding e-learning process management:

> "*Financial implications are potential deal-breakers. For example, if it turns out we will need approximately eight new full-timers, the investment probably will not be worth it, and thus declined* " - Interviewee 2

Most of the interviewees acknowledged a working e-learning system does not stop after its initial creation and implementation; assumed was that such a system would require continuous guidance, maintenance and overall management, which all have their financial implications in terms of labor.

> "*The involved extra work, labor, and costs an implemented e-learning system will have, is the biggest drawback and threat*" - Interviewee 2

LACK OF CAPACITY

The interviewees expected skills of the IT department to be sufficient for the e-learning inititative. However, interviewees questioned capacity of the IT department:

> *"We currently have multiple projects running through the IT-department, which I sometimes consider to be an overkill of projects"* - Interviewee 4

The indicated potential threat of capacity was only mentioned for the IT department, other departments were assumed to have sufficient capacity in terms of employees.

> "*They (i.e., IT department) are flooding in projects, and many of those projects are cancelled or stalled already*" - Interviewee 5

HIGH EMPLOYEE-TURNOVER AMONG HEISTERKAMP'S TRUCK DRIVERS

Employee turnover, i.e. truck driver turnover, was mentioned as a potential threat to the effectiveness of an e-learning system. Interviewees indicated knowledge would be lost every time a truck driver goes somewhere else, and on the other side, newly hired truck drivers would require more energy in terms of training and education:

> "*Our driving staff tends to fluctuate, and therefore the connection between organization and driver is quite low*"

- Interviewee 3

"*We do have core drivers that stay with the company for a longer time, but the new truck drivers will require more energy in terms of training and educating*"
- Interviewee 3

The indicated employee turnover is largest among eastern-European (especially Polish) drivers, as they tend to change employer for even the slightest increase in salary, according to the interviewees.

"*Employee turnover is a force to be reckoned with, as I do not see it decreasing in future years*"
- Interviewee 5

SUPERVISION AND CONTROL

All of the interviewees regarded supervision and control to be a real challenge for e-learning. They expected e-learning to demand much more discipline and motivation from the individual end-users, which are Heisterkamp's truck drivers in this case.

"*I think the hardest part of an e-learning system is the supervison and control*" - Interviewee 7

Physical absence, thus not being able to see how and if the truck drivers actually use e-learning, was mentioned as a potential problem, challenge, and disadvantage of organizational e-learning, compared to face-to-face trainings.

"*Some sort of control/guidance-system should be implemented for the e-learning system as well, somehow*" - Interviewee 2

E-LEARNING PLATFORM DRAWBACKS

Interviewees critically questioned what platform should be chosen/used to accommodate the eventual e-learning system.

"*Heisterkamp needs to ask itself how to distribute the system, which platform, and does every truck driver have the required material(s)?"* - Interviewee 8

Laptops, tablets, and the already installed 'Carryweb' board-computer were popular, and mostly mentioned. However, the individual platforms all had their financial and/or practical downsides according the interviewees, and none of the previously mentioned methods gained unanimous support.

"*After distributing laptops, for example, 30% will stop running do to man-made errors, system-errors, theft, etc*" - Interviewee 2

KNOWLEDGE TRANSFER CAPABILITIES

Interviewees expressed doubts whether the truck drivers of Heisterkamp would know how to use an e-learning system, and if they are actually capable of extracting knowledge from it.

"Some disadvantages in my opinion could be that chauffeurs see the information and forget it almost instantly"- Interviewee 3

Also, questions ascended whether the HRM department would have the capabilities to create new learning programs, and transfer relevant knowledge to the truck drivers. From the interviews, it became clear that the general opinion was that communication and linkage between teacher and learner would have to be finetuned and increased overall. A different threat to the knowledge-transfer had to do with the psychical absence that belongs to e-learning. Interviewees regarded the assumed theoreticality of e-learning as a downside, and stated that e-learning lacks the ability to provide

practical examples and explanations, a feat that face-to-facemeetings do possess:

> "*The ability to further elaborate something is missing in an e-learning system*" - Interviewee 7

E-LEARNING ALLOCATION CHALLENGES; TIME AND PLACE

From the interviews, some practical reservations came to the discussion in terms of where and when the chauffeurs would have to use the eventual e-learning system. Possible solutions mentioned by the interviewees varied from using e-learning at central Heisterkamp locations, to using the eventual e-learning system in the truck driver's cabin.

> *"Where do we want our chauffeurs to use the system? Which times do we want our truck drivers to use the e-learning system? These are all practical problems that need to be tackled"* - Interviewee 7

Safety sounded to be an important factor, as interviewees stated that the system needed to be prohibited from use during actual driving, due to 'obvious' safety reasons. Some of the interviewees with these safety concerns vouched for using the e-learning system on central Heisterkamp locations, instead of using the system in truck cabines. However, enabling the use of e-learning on central locations also had its drawbacks, according to the interviewees. Central computer-rooms, where the drivers could use the eventual system, were assumed to generate 'chaos' in terms of supervision and control.

> "*The culture among truck drivers can be defined as very solid. They tend to help each other wherever they can, so test answers might be distributed, or people might even fill in tests for each other*" - Interviewee 8

The interviewees indicated that the employees of the planning department are expected to play a very important role in the allocation of e-learning, as they are expected to plan the activities of the truck driver in a way that they also have time to use the e-learning system. The problem with this construction, according to the interviewees, was that the occupancy of Heisterkamp's trucks does not take the use of e-learning into account.

> *"Heisterkamp's trucks need to keep moving in order to generate money, truck- and truck driver activity needs to be allocated very carefully"* - Interviewee 3

The topic of e-learning allocation generated legal and ethical concerns, among some of the interviewees. Privacy concerns, country of management of the system, and preservation of the system were expected to create legal challenges for Heisterkamp. Also, some of the interviews wondered if it was legally possible to make truck drivers use the eventual e-learning system during their breaks and time off. And if so, would this create unwanted tension between employee and employer?

> *"We cannot expect the truck drivers to start e-learning in their short breaks, and sometimes this is even legally prohibited"* - Interviewee 6

CULTURAL DIFFERENCES AMONG HEISTERKAMP EMPLOYEES

The wide differences in country of origin among truck drivers was regarded as a potential threat for organizatonal e-learning at Heisterkamp. According to the interviewees, these different origins imply different cultures, which in their turn imply different norms and values. More important, lingual challenges were expected for the e-learning system.

> *"How are we going to make Polish drivers use e-learning? Chances are they do not understand the test, or do not even bother"*
> - Interviewee 6

PRELIMINERY INTERVIEW REFLECTION: ADDING PRIORITISATION

In this section, a reflection has been made on the set of problems discovered by the preliminary interviews. In summary, eleven potential problems/challenges were detected from the interviews:

1. Lack of knowledge and experience
2. Organizational resistance towards change
3. End-user resistance towards e-learning
4. Financial implications
5. Lack of capacity
6. High employee-turnover among Heisterkamp's truck drivers
7. E-learning platform drawbacks
8. Supervision and control
9. Knowledge transfer capabilities
10. E-learning allocation challenges: time and place
11. Cultural differences among Heisterkamp employees

However, these topics weren't set in any order of importance as of yet, thus the next step was to subject these eleven topics to prioritization, in order to distinguish more important topics and less important topics, according to the organization. The reason for adding prioritization is to eventually compare theoretical insights gained by literature, to the organizational views on the matter of e-learning. In this way, final recommendations were expected to receive additional weight.

INTRODUCING THE BORDA METHOD

In this research the Borda count method was chosen to add prioritisation to the eleven topics. In this case, the points for each topic are summed across all voters, and the winning candidate is the one with the greatest total number of points. The alternative topics are also ordered according to these counts. The reason for choosing the Borda count method is that Borda's voting method is conceptually simple and is perhaps the easiest ordinal method to implement (Lansdowne & Woodward, 1996). Also, voting theorists have shown that Borda's method is the optimal positional voting method with respect to several standards, such as minimizing the number and kinds of voting paradoxes (Lansdowne & Woodward, 1996).

APPLYING THE BORDA METHOD

In practice, the topics were given a number, 1 to 11. Next, the interviewees were asked to make a top eleven out of the topics, prioritising most problematic (expected) issue (1) to least problematic (expected) issue (11). Also, an explanation was asked why the interviewees assigned three respective topics to their places in the top three.

Afterwards, Borda scores were calculated to establish an (aggregated) order of importance, thus across all interviewees. This was done by firstly weighting the rankings for each member, where the topic of highest rank per interviewee is given (11 – 1) points, the second highest ranked topic was given (11 – 2) point, etc.

In the end, weighted values were calculated for each individual topic across all interviewees, using the previously mentioned rankings. The results of using the Borda count method can be found in tables 2 (Interviewee prioritisation results) and 3 (Aggregated Borda scores), and is illustrated in figure 2 (Aggregated Borda scores).

Table 2; Interviewee prioritisation results

	M1	M2	M3	M4	M5	M6	M7	M8	Weights
Rank 1	6	UD	5	10	5	5	4	6	10
Rank 2	9	UD	1	4	6	8	5	8	9
Rank 3	4	UD	9	6	11	10	7	10	8
Rank 4	2	UD	10	5	4	11	8	4	7
Rank 5	3	UD	6	3	8	1	10	5	6
Rank 6	1	UD	11	9	1	2	11	11	5
Rank 7	5	UD	2	8	9	3	2	9	4
Rank 8	8	UD	8	2	10	6	3	7	3
Rank 9	7	UD	3	1	7	7	1	1	2
Rank 10	10	UD	7	7	3	9	9	2	1
Rank 11	11	UD	4	11	2	4	6	3	0

Table 3; Aggregated Borda scores

Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	Topic6	Topic 7	Topic 8	Topic 9	Topic 10	Topic 11
31	24	22	41	56	46	19	41	32	43	30

Topics ranked per member (M) can be derived from table 2, along with their weights. Table 2 also shows results from one interviewee are missing/undisclosed (UD). The concerned interviewee was unable to subject the topics to prioritization, but instead valued each of the topics of equal importance. This has absolutely no impact on the outcome of calculating Borda scores, as every topic would gain the same amount of (additional) points, thus data from interviewee 2 was left out of the equation. Table 3 shows the overall aggregated Borda scores for every individual topic. For example, topic 5 (lack of capacity) is clearly regarded as the most important topic according the interviewees, while topic 7 (e-learning platform drawbacks) seems to be prioritized to the least extend. The final order of importance (strongest perceived threats) is the following:

1. Topic 5: Lack of capacity
2. Topic 6: High employee-turnover among Heisterkamp's truck drivers
3. Topic 10: E-learning allocation challenges: time and place
4. Topic 4: Financial implications
5. Topic 8: Supervision and control
6. Topic 9: Knowledge transfer capabilities
7. Topic 1: Lack of knowledge and experience
8. Topic 11: Cultural differences among Heisterkamp employees
9. Topic 2: Organizational resistance towards change
10. Topic 3: End-user resistance

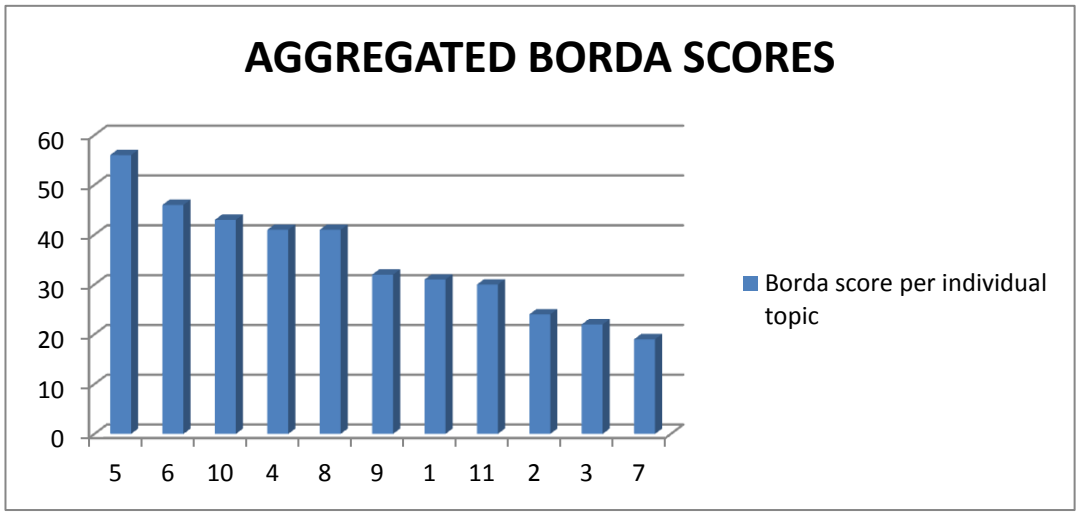


Figure 2; Aggregated Borda scores

towards e-learning
11. Topic 7: E-learning platform drawbacks

The established approach of tackling the assumed threats/challenges for the e-learning implementation program is elaborated in the next section.

RESEARCH PLAN OF ACTION

The previously mentioned research guidelines (figure 1) illustrates the established plan of action, and its individual components (A-D);
First, a literature review was conducted in order to determine the criteria for organizational readiness to e-learning. The literature review of organizational readiness to e-learning represents section 'A' within the complete framework of research guidelines (Figure 1).
Second, based on the interview results, organizational data and the previously mentioned literature review, an analysis was created for Heisterkamp. The organizational readiness analysis represents section 'B' within the complete the framework of research guidelines (Figure 1). Scientific search engines like Google Scholar and Scopus were used to retrieve relevant literature.

Next, literature was consulted in order to retrieve criteria for (successful) e-learning creation and implementation, adding to the already established criteria for organizational readiness to introduce e-learning, and deal with the organizational topics resulting from the preliminary interviewees. This represents section 'C' within the complete the framework of research guidelines (Figure 1). Scientific search engines like Google Scholar and Scopus were also used to retrieve relevant literature on this behalf.

At last, an e-learning implementation plan was created for Heisterkamp, based on the organizational readiness analysis and the additional theories. The e-learning implementation plan represents section 'D' within the complete framework of research guidelines (Figure 1).

ORGANIZATIONAL READINESS TO E-LEARNING

LITERATURE REVIEW: EXTRACTING CRITERIA

E-learning readiness is defined as "how ready the organisation is on several aspects to implement e-learning" (Schreurs, Ehler, & Moreau, 2008). The reason for choosing e-learning readiness as a central topic, and starting point in this research, was based on the analysis of the existing literature on the matter. Indeed, e-learning readiness should be determined before organizations introduce e-learning and benefit from its advantages (Schreurs, Ehler, & Moreau, 2008; Haney, 2002). Other researchers agree, e-readiness assessment allows one to design comprehensive e-learning strategies and effectively implement ICT goals (Kaur & Abas, 2004; Saekow & Samson, 2011).

Darab & Montazer (2011) took the liberty to develop a list of the several models that have been proposed to assess the degree of e-learning readiness, such as; The e-learning readiness assessment model recommended by the Economist Intelligence Unit (EIU), assessment model for e-learning (Kapp, 2005), Readiness Model for Accessing E-learning (Chapnick, 2005), E-learning Readiness Model for Organizations (Aydin & Tasci, 2005), Readiness Combination Model for Acceptance of E-learning (Borotis & Poulymenakou, 2004), the Rosenberg Model (Rosenberg, E-learning: Strategies for delivering knowledge in the digital age, 2001), the Broadbent Model (Broadbent, 2002), the Anderson Model (Anderson, 2002), the Haney Model (Haney, 2002), the Rogers Model (Rogers, 2003), the Worknowledge Model (Worknowledge,

2003), the Nilson Model and the Carlos Machado Model (Machado, 2007).
In their study, Darab & Montazer (2011) compared the main criteria of the e-readiness models; technological infrastructure, content, policy, culture, standards, financial considerations and human resources, as detailed in figure 2. They concluded that most of the models included technical infrastructure readiness, content readiness, cultural readiness and financial resources, but none of the models included all of the readiness criteria. Indeed, Psycharis (2005) also observed that, although the models refer to many common elements, there is no analogy and sometimes correlation among the factors suggested by the various models (Psycharis, 2005). Psycharis (2005) therefore attempted to correlate the factors of e-learning readiness mentioned in the literature, and classified them into 3 major categories, which he elaborated as follows;

Resources: it includes the *technological readiness*, which investigates the access to the internet or/and the intranet provided, the available technological systems and the way they are used as far as e-learning is concerned, the *economic readiness*, which examines the willingness of the organization to invest in e-learning and the *readiness of the human resources*, examining the knowledge and the skills possessed by the ones involved in e-learning (Psycharis, 2005).

Education: it includes the *readiness of content*, which examines the availability of the educational content, its form, its characteristics, the degree of its reuse and its adequacy for the enhancement of personalized teaching; it also includes the *educational readiness*, which examines the ability of an organization to organize, analyze, design, implement and evaluate an educational program (Psycharis, 2005).

Environment: it includes the *entrepreneurial readiness*, which examines the structure and the practices of the organization that affect e-learning, the *readiness of culture*, which examines the organization's as well as the staff's behavior and attitudes in relation to e-learning, and the *leadership's readiness* which examines the support provided by the administration (Psycharis, 2005).

For Heisterkamp, all of these the e-learning readiness criteria, illustrated in figure 3, were investigated, in order to deliver a complete assessment.

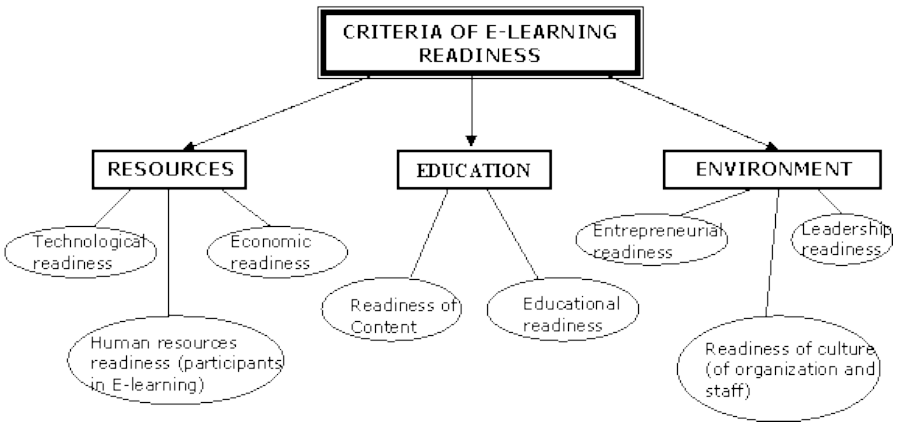
TECHNOLOGICAL READINESS

Technology is one of the factors that can be effectively used to adapt a technological innovation in an organization (Rogers, 2003). Rogers states that technology has two distinguishable components: hardware and software, where hardware is the part of technology that includes the physical components, and software is the part that consists of the information aspects that help to use it to perform certain tasks (Rogers, 2003). In general, a company that wishes to implement/adopt e-learning in the organization will have to meet the

Figure 3; Comparing e-learning readiness assessment models (Darab & Montazer, 2011)

Models	Criteria						
	Technological infrastructure	Content	Policy	Culture	Standards	Financial considerations	Human resources
E-learning readiness model (EIU)	√	√	–	√	–	–	–
Kapp's assessment model for e-learning	√	√	√	√	–	√	–
Chapnick's readiness model for accessing e-learning	√	√	–	√	–	√	√
Aydin & Tasci's e-learning readiness model for organizations	√	–	–	√	–	–	√
Borotis & Poulimenakou's readiness combination model for acceptance of e-learning	√	√	–	√	–	√	√
Rosenberg's model	√	–	–	√	–	√	√
Broadbent's model	√	–	–	√	–	√	√
Anderson's model	√	√	–	√	–	√	√
Honey's model	√	√	–	–	–	√	√
Rogers' model	–	–	–	–	–	–	√
Worknowledge's model	√	–	–	√	–	√	√
Nilson's model	√	√	–	√	–	–	–
Carlos machado's model	√	√	–	√	–	–	√

Figure 4; Criteria of e-learning readiness (Psycharis, 2005)



minimal e-learning hardware and software requirements. Indeed, without appropriate equipment and easy access, it is quite hard, if not impossible, to implement any e-learning (Oliver & Towers, 2000).

Although this might sound as a potential barrier to implement e-learning in any organization, e-learning does not actually require a huge infrastructure (Broadbent, 2002). Indeed, a working internet connection and supplying enough computers for end-users would be sufficient for an effective e-learning project (Aydin & Tasci, 2005).

Aydin & Tasci (2005) acknowledge that any assessment should include identification of the hardware available in a company. However, they also state that having easy access to hardware is not enough. The authors refer to the previously mentioned work of Rogers (2003), where he notes that easy to understand innovations are adopted more rapidly than ones that require the adopter to develop new skills and understandings. Because of this, Aydin & Tasci (2005) state that employees should also have the basic computer and internet skills to benefit of e-learning. The authors proceed on topic of computer literacy by quoting a research study conducted by Rosen and Weil (1998), about how user psychology makes technology projects fail. The study shows that around 58-65 percent of any organization's employees is generally uncomfortable with new technology and is even technophobic to some degree (Rosen & Weil, 1998). Aydin & Tasci (2005) therefore conclude an e-learning initiative may as well suffer due to this technophobia. Consequently, they suggest identification of employees' attitudes toward use of technology should also be taken into account in the process of developing an e-learning assessment. For this research, one must ask whether e-learning can still be regarded as a 'new technology', and thus if technophobia is applicable for the e-learning initiative. After all, e-learning has been around, and used, for more than a decade. Nonetheless, 'technophobia' was covered for this research.

ECONOMIC READINESS

This factor considers the budget size and allocation process (Chapnick, 2005). Financial considerations of implementing e-learning within organizations seem to take a central place within existing literature. Indeed, Ali & Magalhaes (2008) state costs are frequently mentioned in the literature as one of the most significant barriers to e-learning; 'technology is dominant in e-learning, and it is also expensive, unpredictable and can become obsolete' (Ali & Magalhaes, 2008). They further state that the initial costs of buying computers, especially in the early implementation stages as well as the

ongoing costs of upgrading systems is regarded to be very high (Ali & Magalhaes, 2008). Haney (2002) states that human beings often focus on the short-term considerations of a situation, while undervaluing the long-term considerations. The author continues that maintenance costs of a system will exceed initial installation costs, and thus need to be considered.

According to Psycharis (2005), the willingness to support an e-learning initiative and commitment to the investment in e-learning, plays a crucial role for the successful adoption of e-learning. The author states that, for an e-learning solution in a given organization to be effective, the organization should be willing to devote a large amount of capital for e-learning and be able to recognize the long-term benefits, financial or not, that it has to offer (Psycharis, 2005). In addition, Psycharis (2005) suggests that an ROI (Return Of Investment) model is necessary both for the estimation of the cost and the anticipated benefits so that the managers can be persuaded to invest in e-learning solutions. According to this, an attempt to quantify the e-learning initiative was developed for Heisterkamp, through means of the earlier mentioned ROI model.

HUMAN RESOURCE READINESS

For the successful implementation of e-learning in an organization, the staff should be able to work easily and cosily with web technology (Psycharis, 2005). Psycharis (2005) reports this statement based on a study of Tucker, Pigou & Zaugg (2002), which shows that students with restricted experience on computers are four times more likely to withdraw from the e-learning educational process than the students which work with them (Tucker, Pigou, & Zaugg, 2002). Minton (2002) concurs, the learner must feel comfortable enough with the technology to concentrate on the content of the training and operate efficiently with the interactive elements in the learning module (Minton, 2000).

The results of the previously mentioned existing literature implied an evaluation of the computer skills of Heisterkamp's employees for this research. Furthermore, tutors responsible for the teaching of e-learning programs should also participate in the evaluation of the educational process as well as in the design of the educational content (Driscoll, 2002). According to Driscoll (2002), this logically means that the tutors of the e-learning programs should also possess relevant knowledge and experience.

Continuing on the road of employee and staff skills, Aydin & Tasci (2005) mention that the more skilled an organization's human resources, the more likely the organization is to be successful in general. They state, according to earlier work of Rogers (2003), that individuals who have a level of higher education are more likely to adopt an innovation than others. Hence, education levels of employees can be used as one of the predictors of e-learning readiness (Aydin & Tasci, 2005). They further claim that companies with more skilled human resources personnel have a better chance to succeed at e-learning. They report on earlier work of Carnell & Shank (2003), and Koska (1992), that the existence of a 'champion', in other words someone who has the knowledge, skills, responsibility and authority to lead the organization toward adaptations of an innovation, is positively related to adoption of an innovation. This implied the need for an evaluation of the HRM department of Heisterkamp, and the search for the existence of 'champion(s)' at Heisterkamp.

READINESS OF CONTENT

E-learning content readiness refers to the subject matter and goals of the instruction (Chapnick, 2005). The subject matter can further be defined as e-learning content in terms of interactivity, reusability and

interoperability (Karmakar & Wahid, 2000).

Psycharis (2005) regarded the educational content to be of crucial importance, and suggests it is one of the first issues to be taken into consideration during an organization's attempt to implement e-learning is the availability of it (Psycharis, 2005). The author further states that the educational content can either be developed internally in the organization or be detected in the company's documents, in internal or/and external libraries, in the internet or in the market ("off-the-shelf"). Referring to e-learning content however does not mean that trainees are presented with a volume of texts, Word or PowerPoint documents. An essential element of e-learning is the teaching process, based on communication and interaction and therefore a variety of multi-media should be used, such as audio and video (Psycharis, 2005).

On behalf of content readiness, Darab & Montazer (2011) state that it is as important for the intended knowledge and experience to be properly transferred to the student as it is necessary for the learning plan (the professor's pedagogical approach and preferences) to be well coordinated and consistent with the purported content (Darab & Montazer, 2011).

EDUCATIONAL READINESS

Educational readiness refers to the ability of an organization to organize, analyze, design, implement and evaluate an educational program (Psycharis, 2005). Thus, while content readiness refers to the subject matter and availability of content within the organization, educational readiness refers to the ability of an organization to actually acquire and/or develop the educational content (Psycharis, 2005). Other researchers agree, the knowledge and experience that exists in the organization in relation to the planning, implementation and evaluation of an educational program plays an important role for its readiness to adopt e-learning (Borotis & Poulymenakou, 2004). Psycharis (2005) further states on behalf of educational readiness that it includes psycho-pedagogical, teaching and cognitive characteristics. For this research, this implied that Heisterkamp's ability to organise, analyse, design, implement and evaluate an educational programme needed to be evaluated.

ENTREPRENEURIAL READINESS

The entrepreneurial readiness of an organization refers to the structure and the practices of the organization that affect e-learning (Psycharis, 2005). According to Psycharis, the organizations that decide to adopt and implement e-learning have to consider it as a primary part of their strategy. He continues that a given organization possesses a high degree of readiness for the adoption of e-learning when the strategy is fully in line with its entrepreneurial aims.

Psycharis (2005) also mentions that an organisation's readiness depends on its external environment. Potential political and legal obstacles need to be evaluated, which might discourage and prohibit the development of e-learning programs (Psycharis, 2005). Accordingly, strategy, governance structure and organizational policies at Heisterkamp were investigated for this research.

READINESS OF CULTURE

The readiness of culture examines the organization's culture as well as the staff's behaviour and attitudes in relation to e-learning (Psycharis, 2005). The author continues stating the establishment of an appropriate culture is very important for the successful adoption of e-learning by an organization. In his work of linking organizational culture to sustained competitive advantage (SCA), Barney (1986) defines organizational culture as a complex set of values, beliefs, assumptions, and symbols that define the

way in which a firm conducts its business (Barney, 1986). Apparently, all of these attributes of culture must be appropriate and aligned with the e-learning initiative.

However, the next question was how to measure the organizational culture at Heisterkamp? On this behalf, Psycharis (2005) refers to the work of Rosenberg (2001), where he states that the attitudes and the behaviours that prevail in an organization should permit e-learning development. In this sense, e-learning, as well as any other form of learning, should be part of the everyday working activities of each member of the staff (Rosenberg, E-learning: Strategies for delivering knowledge in the digital age, 2001). In other words, an organization that is willing to implement it, should permit and encourage free information and knowledge flow into the organization or give incentives (e.g., financial) to the staff or reward in some way those who follow this practice (Psycharis, 2005).

For this research, on behalf of readiness of culture, this implied assessing the encouragement, attitudes and behaviours towards (e)learning; e-learning should be recognized as an added-value element of the organization; it should be considered namely, as a part of the production process and not as 'a waste of time' (Rosenberg, E-learning: Strategies for delivering knowledge in the digital age, 2001).

LEADERSHIP'S READINESS

Leadership's readiness examines the support provided by the administration (Psycharis, 2005). Change management researchers indeed argue that, while change must be well managed, it also requires effective leadership to be successfully introduced and sustained (Gill, 2010). Moreover, a link between leadership readiness and readiness of culture can be established; the development of a culture that embraces e-learning namely reveals the existence of support for this culture by the senior management (Psycharis, 2005). Psycharis also believes that without appropriate leadership support for e-learning, the acceptance of this innovation will be slow if not impossible.

Psycharis (2005) states that 'the provision of help to the staff should lie in the area of the administration's responsibility so that the changes which take place in the organization through e-learning are finally accepted'. The author further notes that the administration is expected to recognize, reward and enhance the participation in e-learning (Psycharis, 2005). He clearly states that this attempt, aiming at the acceptance of the changes by the employees and at altering their attitude towards e-learning, should start *before* the development of e-learning and be preserved *during* and *after* its development and its implementation. For this research, an evaluation of Heisterkamp's leadership readiness was done by assessing whether the management has actually created an appropriate environment for the adoption of e-learning.

LITERATURE REVIEW: SUMMARY

A total of eight distinguishable criteria were derived from the literature review; technological, economic, human resource, content, educational, entrepreneurial, culture and leadership's readiness.

The next step was to conduct the actual organizational readiness to e-learning analysis, after which the prioritised topics from the preliminary interviews could be dealt with (in a specific study context). After the organizational readiness analysis and the prioritised topics, a design was made to support a potential e-learning implementation plan.

ORGANIZATIONAL READINESS ANALYSIS AT HEISTERKAMP

In this section, Heisterkamp's organizational readiness was studied in view of the previously established assessment criteria.

TECHNOLOGICAL READINESS

Schreurs, Ehler and Moreau (2008) indicate e-learning requires technological facilities like ICT infrastructure, referring to the hardware and software requirements; internet connectivity; a flexible learning management system to handle web based materials; the ability to track learning activity. Other researchers agree; if an organizations wishes to effectively use e-learning, the e-learning technology will require integration with existing systems, taking serious consideration of software and hardware compatibilities and capabilities (Ali & Magalhaes, 2008).

The interviewees suggested three potential possibilities for the e-learning initiative: computers on the various Heisterkamp locations, the CarrierWeb computer inside trucks, and truck drivers' own hardware in the form of computers and laptops. Each of the three potential solutions is analyzed in terms of hardware, software and connectivity.

CARRIERWEB

By means of the CarrierWeb system, the customer and Heisterkamp can follow individual vehicles and communicate with their drivers. Consequently, connectivity of CarrierWeb is very good. However, there are certain obstacles in both hardware and software regarding e-learning potential using the CarrierWeb system within Heisterkamp's trucks, verified with Heisterkamp' IT manager. Hardware is lacking to fully support all of the desired tools concerning e-learning, as the system only support text-based applications. Other media is not supported within Heisterkamp's CarrierWeb systems as of yet, which therefore implies upgrades would be necessary to reach technological readiness of the CarrierWeb systems to support e-learning.

However, should this hardware obstacle be tackled, software limitations arise regarding e-learning potential using the CarrierWeb. CarrierWeb is a company who provides the product in terms of hardware, as well as the accessory software. If a customer, Heisterkamp in this case, whishes to customize the software of the product to their specific needs, a collaboration with CarrierWeb will have to follow in order to realize the desired customization. This means the product is closed, and laying foundations for e-learning using the CarrierWeb system would basically imply outsourcing software (and hardware) needs to CarrierWeb. This potential solution thus seems inappropriate, as the management board explicitly stated if Heisterkamp should implement e-learning, the system, software and intellectual property should be fully owned by Heisterkamp.

E-LEARNING ON (HEISTERKAMP) LOCATION

Another potential solution provided by the interviewees was using computers on various central Heisterkamp locations throughout Europe. The idea was that truck drivers resting in between jobs could use this time to develop themselves, by the use of e-learning on the premises. Of course, this would imply these locations would have to facilitate e-learning in terms of hardware and accompanying software before the conclusion of 'technologically ready' can be made for this particular solution.

The intended locations in this case are Oldenzaal, Travemünde and Gent, as these are the locations where respectively an average of fifteen, eight and ten truck drivers are staying over for the weekends.

These truck drivers are all originating from Eastern Europe, and every truck driver stays over at these central locations several times a year. Truck drivers originating from Germany and The Netherlands mostly return to their homes during the weekends, this thus implies the potential use of e-learning on central Heisterkamp locations will mostly be used to by Heisterkamp's truck drivers originating from Eastern Europe. As of now, Oldenzaal and Travemunde have two computers set up in their cafeteria's dedicated for truck drivers, Gent has only one, and all locations have the required connectivity. Also, these computers support every tool and media Heisterkamp's deems necessary, i.e. text-based sources, video, etc. This means these three locations appear to be technologically ready only when the truck drivers circulate their time using the dedicated computers. Simply adding more computers will increase the technological readiness of these central locations, however what is more important is that these computers are already linked with Heisterkamp IT-department via VPN connections. Individual truck drivers accounts are already created, which truck drivers can use to print their driving hours. Even more, these accounts are already used at one location (Oldenzaal) to facilitate small tests Heisterkamp's HRM department uses to sharpen the knowledge of the individual truck drivers. This means the foundation of an e-learning initiative has already been placed, regarding technological readiness.

TRUCK DRIVERS' OWN EQUIPMENT

In July 2014, the world had an internet penetration rate of 40.4% (Internetlivestats). This means that almost three billion people, or just over 40% of the world's population has an internet connection, and this number is still rising. The Netherlands are ranked sixth in terms of internet penetration per country, with more than 96% of the population having internet. Germany is ranked 24th, with almost 87% of the population having internet. Poland is ranked 53th, with more than 67% of the population having internet. Slovakia is ranked 26th, with almost 83% of the population having internet. Latvia is ranked 36th, more than 76% of the population having internet.

96% of the Dutch population having internet (connectivity) does not necessarily mean the same percentage of the population also has access to a personal computer, i.e. desktop and/or laptop. While the Central Bureau of Statistics shows this is actually the same percentage for the Netherlands, it is hard to find recent relevant data on personal computer penetration rate per country. However, for this research e-learning is by definition limited being delivered via the Internet, which is why percentages on internet penetration rate gives clear view on the absolute maximum percentage of people, per country, benefitting from Heisterkamp's potential e-learning initiative. This implies the potential solution of truck drivers using their own equipment to start e-learning will pose a good solution for Dutch, German and Slovakian truck drivers, as nearly all truck drivers of Heisterkamp originating from those countries have internet, and will probably have some sort of personal computer. However, for Polish and Latvian truck drivers, the maximum percentage of truck drivers having the capability to benefit from Heisterkamp's e-learning initiative by using their own equipment is limited at a 67% and 76% maximum, respectively, but might (and probably will) be lower. This means solely relying on truck drivers using their own equipment to use e-learning will likely not be appropriate for Heisterkamp.

An actual survey among Heisterkamp's truck drivers was not possible due to time restrictions and potential response bias. In this case response bias might occur when asking truck drivers whether they have a

working internet connection and personal computer or not, as they might manipulate their answer to prevent having to use them for their work. Another scenario would that truck drivers would provide wrong answers due to (wrongly) expecting Heisterkamp might distribute computers to those not owning any.

TECHNOPHOBIA

According to existing literature, 'technophobia' is a force to be reckoned with (Aydin & Tasci, 2005). Next to the earlier mentioned potential response bias, a full scale research of technophobia among Heisterkamp truck drivers would take an excessive amount of time and psychological experience, both absent for this research. However, the solutions for dealing with technophobia as an organization are relatively simple, and can be implemented without the need of an actual technophobia-analysis in the first place. So instead of diagnosing how many truck drivers suffer from technophobia, actual steps are offered to reduce technophobia resulting from the e-learning implementation. Sivakumaran & Lux (2011) have developed steps to help adult students dispel their computer anxiety. The authors propose a three-step process for helping adult learners overcome technophobia. The first step is recognizing the purpose behind the computer usage, the second step is creating a positive and nurturing learning environment and the last step is providing a support system for students. The authors further note that the steps are interdependent, which implies they are part of a process rather than a linear sequence of events (Sivakumaran & Lux, 2011):

Step 1: Purpose

The first step is recognizing the purpose behind the computer usage, and orienting learners to the benefits of knowing how to use computers in an efficient manner (Sivakumaran & Lux, 2011). The authors state this step captures the benefits of learning basic computer features so that adult learners will not be frustrated and waste time trying to figure out the technology, while procrastinating to learn the course contents, as in the end, Heisterkamp wants the learners to actually use the created course content. Explaining the benefits of learning basic computer features poses a great addition for the face-to-face introduction Heisterkamp already conducts for new truck drivers.

The authors further mention that the goal is to convince the student that they do not have to be computer experts to use e-learning, and furthermore, instructors must make the class relevant to the learners and create direct correlation with their lives to maintain interests (Sivakumaran & Lux, 2011). Direct correlation with the lives of Heisterkamp's truck drivers should not be difficult to achieve, as this is the reason Heisterkamp wants to implement e-learning in the first place. Indeed, it requires the actual learning content to be about their working activities at/for Heisterkamp.

Step 2: Positive Environment

The second step is creating and nurturing a positive learning environment, where workshops should be conducted by staffs that have positive attitudes towards students, especially adult learners, who do not know how to use computers (Sivakumaran & Lux, 2011). The previously mentioned face-to-face introduction lends itself perfectly for this step as well, as Heisterkamp's instructors can actually learn new truck drivers how to use the e-learning program, after explaining the benefits of learning basic computer features (Step 1). Heisterkamp thus needs to create an environment that does not intimidate but provides an invitation to participate, take risks, and learn, as this diminishes the effects of anxiety or technophobia (Sivakumaran & Lux, 2011). This also means it is important for instructors to allow and encourage

learners to ask questions during the face-to-face instructions.

Step 3: Provide Support
The last step is providing a support system for learners in the form of a dedicated go-to person or staff member, where the instructor can also spend addition one-on-one time with students in need of assistance at the computer and be available outside of class to answer students' questions (Sivakumaran & Lux, 2011). The authors continue that due to financial constraints, many institutions offer support through web tutorials or training fellow learners to supervise computer labs. There are two advantages of the latter strategy: it allows adult learners to work with peers, thus creating a comfort zone for them to ask questions and this opportunity also allows student workers to be mentors and teachers to adult learners, thus giving them a positive feeling while providing a great learning experience (Sivakumaran & Lux, 2011).

This means for this third step there are three available options for Heisterkamp, or a combination of options for that matter:

- A dedicated go-to person, which would require contracting a new staff member or adding this support-activity to an already contracted employee, with the required capabilities and capacity.
- Offering web-based support through (web) tutorials, which requires the IT-department to create these tutorials.
- Training fellow learners to supervise the computer rooms on the various Heisterkamp locations. This third option seems especially lucrative, as it enhances learning-experience, and on top of that Heisterkamp could deploy formerly rejected (illness) employees slowly reintegrating back to working routines. Deploying these specific truck drivers is already done in the form of doorkeepers at Heisterkamp locations.

TECHNOLOGICAL READINESS VERDICT

Heisterkamp's technological readiness is very good in terms of the technological readiness criteria, which implies Heisterkamp's e-learning initiative should be fully supported on this behalf. Indeed, the required hardware, software and connectivity are well present and sufficient, especially when combining truck drivers own e-learning using equipment (mainly Dutch and German employees), with e-learning on the premises. The criteria 'technophobia', derived from existing literature, might still pose a threat, but can be reduced quite easily by three earlier-mentioned options.

ECONOMIC READINESS

The literature review regarding economic readiness showed willingness to support an e-learning initiative and commitment to the investment in e-learning, plays a crucial role for the successful adoption of e-learning (Psycharis, 2005). Also, the organization should be willing to devote capital for e-learning and be able to recognize the long-term benefits, financial or not, that it has to offer (Psycharis, 2005). While Heisterkamp recognises the long-term benefits, otherwise e-learning and this research would not be initiated, the devotion of capital does have its limit according to the management. The preliminary interviews showed that the financial implications determine whether e-learning will actually be implemented or not, and in this sense, the expected costs serve as a potential deal-breaker. Consequently, quantification of an e-learning initiative was necessary for both the estimation of the total costs, and the anticipated benefits. Due to the necessary input from analyses of the other criteria, the return on investment (ROI) and economic readiness verdict was placed at

the end of the overall organizational readiness analysis (Page 29).

HUMAN RESOURCE READINESS

The literature review showed the staff, both learner and instructor, should be able to work easily and cosily with web technology (Tucker, Pigou, & Zaugg, 2002). The fact that the instructors, in this case the human resource department, already developed, tested and implemented online educational content in collaboration with the IT department shows they're quite able to work easily and cosily with web technology. Indeed, daily work activities of Heisterkamp's office staff relies on custom made IT programs, implying web technology is fully integrated in the organization and should not pose a threat for the e-learning initiative.

In contrast, Heisterkamp's truck drivers do not come in contact with web technology as often as the office staff during their daily work activities. The interview data used in the readiness of culture analysis (26-28) showed some truck drivers had negative experiences with learning and computers, and therefore possessed negative attitudes towards a potential e-learning initiative. An analysis of every truck driver's web technology experience and computer skills however would be too time consuming. Conveniently, the measures against technophobia, mentioned in technological readiness (Page 19,20) contain steps that will deal with any potential employee web technology inexperience as well. For example, the second step of reducing technophobia contains creating a positive environment, where the face-to-face introduction should be used to actually familiarize new truck drivers with e-learning and explaining how to use the e-learning program. Implementing all of the steps against technophobia therefore renders the need for an analysis, concerning how many truck drivers lack computer experience, redundant.

DETECTING A 'CHAMPION'

The presence of Carnell & Shank's (2003) and Koska's (1992) 'champion', or in other words someone who has the knowledge, skills, responsibility and authority to lead the organization toward adaptations of an innovation, could not be detected in a single person regarding this research's case of e-learning and its implementation. Heisterkamp does not use a change manager to implement innovations or adaptations in general, but instead managers of the concerned department are used to set up specific teams. Indeed, management recalled a dedicated person to implement the potential e-learning initiative would be chosen after receiving the conclusions of this research, after which a team will be set up that covers all areas of expertise.

Human resource readiness on this behalf appears to be good as in this sense, all of the necessary aspects of a theoretical 'champion' are, and will be present within the specially formed project group Heisterkamp plans to use. For example, knowledge about implementing educational content/programs will be brought to the group by the earlier mentioned member of the human resource department, who is already responsible for creating educational content and managing the educational process. Likewise, a member of the IT department should be chosen to arrange technicalities and the setup of the suggested computer labs, etc.

HUMAN RESOURCE READINESS VERDICT

Overall, Heisterkamp's human resource readiness appeared to be pretty good. Most employees should be able to work easily and cosily with web technology, and simple steps can be implemented to help reduce any potential employee web technology inexperience. The lack of a 'champion' in the form of one person can

be covered by a 'champion' in the form of a project group, containing knowledge, skill, responsibility and authority to lead Heisterkamp towards adaption of the potential e-learning initiative.

READINESS OF CONTENT

The following means and materials to serve as potential e-learning content in order to train and develop truck drivers can be detected at Heisterkamp, noteworthy is that all of the listed educational content is already in use:

DRIVERS MANUAL

The drivers manual is created, by Heisterkamp, in order to procure clear information and work instructions, so that Heisterkamp's truck drivers are able to accurately execute their working activities. The manual functions as support for the truck drivers' daily activities, moreover the truck drivers are expected to examine and be fully aware of the contents of the manual within a week of signing a contractual agreement. The drivers manual also confirms to Karmakar & Whahid's (2000) factors of reusability and interoperability, and was therefore regarded as appropriate potential educational e-learning content. Converting the drivers manual to be online accessible is the last step to make it actual e-learning content.

LIST OF DRIVING VIOLATIONS (ONLINE)

Heisterkamp keeps track of driving violations of every truck driver, after which feedback is given by letter to the individual truck driver in question. The driver has the option to respond to the noted violation, after which the correct action can be taken by Heisterkamp, be it supportive, explanative, or punitive. The intention behind keeping track of violation is preventing the respective violations from happening again, i.e. learning from mistakes. Truck drivers also have the ability to retrieve their driving violations via e-mail to a staff member of the respective department, would they wish. The reusable and interactive nature, although requiring an intermediate step, makes the violation feedback-system appropriate potential educational e-learning content. Granting truck drivers online access to their individual driving violations would very much increase interactivity and interoperability of this potential educational e-learning content, as it would remove the required intermediate step of consulting a Heisterkamp employee.

DAMAGE PREVENTION COURSE

A main reason behind the e-learning initiative are future planned online damage prevention courses. These courses come in, when supportive and explanative action have to be taken by Heisterkamp towards individual employees, or a specific group of employees making the same respective mistake(s) and/or damage. Courses containing video support and explanation saves travel time and instructor time, while reaching the specific employee(s) with great ease. E-learning is regarded to be very appropriate for these damage prevention courses as the employee(s) will be able to take the specific course multiple times if he/she wishes to do so, or Heisterkamp wishes the employee(s) to do so.

DRIVER INTRODUCTION COURSE

Heisterkamp gives a driver introduction-course for all new contracted truck drivers. This course is given by designated staff members, in face-to-face classroom style. The course covers various relevant subjects, and offers them with a variety of multi-media such as PowerPoint, videos and images. Offering classroom courses implies high interactivity, however truck drivers follow these courses only once, implying zero reusability and interoperability. On contrast, when transferring the introduction course to actual (online) e-learning content the course suddenly would become highly

reusable and interoperable, but loses its high interactivity due to absence of the face-to-face aspect of classroom teaching. Therefore, a combination of both the initial face-to-face classroom style introduction, and making the introduction online accessible would be ideal.

INTRODCUTION TEST (ONLINE)

All of the newly contracted truck drivers have to take a test after the classical introduction-course, of which the content reflects the content of the introduction. This is a pure text-based, online test and takes place at a computer lab on the premises, where the truck drivers can log in with their personal number to start the test. The learners instantly receive textual feedback on their results, with accompanying explanations to both correct and incorrect answers. The reusable, interactive and interoperable character of providing online tests for new truck drivers makes this very appropriate existing e-learning content, and in fact suggests Heisterkamp already makes use of e-learning.

GENERAL CUSTOMER INSTRUCTIONS AND PREFERENCES

Every individual customer has their own general instructions and preferences, which are registered by staff members of Heisterkamp's commercial department. These customer instructions and preferences are placed on the trucking order truck drivers receive before they carry out the specific job. However, most of the instructions are of general nature, i.e. the instructions and preferences are valid for every job for that respective customer. This implies that customer instructions and preferences are basic information that truck drivers need to know and preferably have this knowledge present at any given time. In this sense, customer instructions and preferences can be seen as educational content, and appropriate e-learning content when online accessible for every truck driver.

TACHOMETER COURSE

Another main reason behind the e-learning initiative are future planned online tachometer courses. These courses come in, when supportive and explanative action have to be taken by Heisterkamp towards individual employees, or a specific group of employees, having difficulties with operating the tachometers equipped in Heisterkamp's trucks. Courses containing video support and explanation saves travel time and instructor time, while reaching the specific employee(s) with great ease. E-learning is regarded to be very appropriate for these tachometer courses as the employee(s) will be able to take the specific course multiple times if he/she wishes to do so, or Heisterkamp wishes the employee(s) to do so, without having to reserve instructor and travel time.

CARRIERWEB COURSE

Another main reason behind the e-learning initiative are future planned online CarrierWeb courses. These courses come in, when supportive and explanative action have to be taken by Heisterkamp towards individual employees, or a specific group of employees, having difficulties operating the CarrierWeb systems equipped in Heisterkamp's trucks. Courses containing CarrierWeb video support and explanation of the system save employee travel time and instructor time, while reaching the specific employee(s) with great ease. E-learning is regarded to be very appropriate for these CarrierWeb courses as the employee(s) will be able to take the specific course multiple times if he/she wishes to do so, or Heisterkamp wishes the employee(s) to do so.

The introduction course already familiarizes the employees with the CarrierWeb system, by means of a small simulation carried out by the instructor, so the foundation for a CarrierWeb courses is already present. The manager of the human resource department indicated a simulation

offered via e-learning would be ideal for the truck drivers.

READINESS OF CONTENT VERDICT

Heisterkamp's readiness of educational content somewhat lacks. While there certainly is enough potential e-learning content that Heisterkamp can use for its e-learning initiative, emphasis must be put on the word 'potential', as only the online introduction test can be used as actual e-learning content as of now. The rest of the educational content will have to be transferred into online material and online courses, before it can be put to use for Heisterkamp's e-learning initiative.

EDUCATIONAL READINESS

As mentioned in the literature review, the educational readiness refers to Heisterkamp's ability to organise, analyse, design, implement and evaluate educational content (Psycharis, 2005). All of the detected educational content present at Heisterkamp was created by the organization itself, indicating Heisterkamp certainly possesses the ability (educational readiness) to develop/create educational content. Implementation is also realized for the detected educational content, verifying the implementation-ability of Heisterkamp.

The trigger for the organization of educational content varies greatly, although by definition it tends to be reactive to certain developments in or around Heisterkamp. Examples regarding triggers towards educational content organization are; customers informing Heisterkamp of certain demands/whishes, recurring damage caused in materials, recurring errors by employees regarding working methods, new legislations, etc. The organization for educational content is initiated by the management team, in consultation with the appropriate department for the to be created content. The appointed employees are left in charge with designing and creating the appropriate content, and consequently manage the process of the creation from that point onwards. The designated employees design the educational content purely based on contents, i.e. only relevant information Heisterkamp want the learners to grasp is used. After design and implementation, constant evaluation of the content is done by keeping the content up to date and processing learners' input (content consulted) and output (example: test results). Analysis however, thus tracking whether the educational content actually has an effect on the external environment Heisterkamp wanted to change (improve), seems to be neglected by Heisterkamp.

The literature review on educational readiness showed that psycho-pedagogical, teaching and cognitive characteristics should be considered with the development of educational content. These characteristics are mildly detected in process of developing educational content, in a sense that the designated employees make an estimate of the overall lingual and intellectual level of their learners, and consequently the collective profile of the learners are taken as standard. Individuals who fit the collective profile of a learner, being an ex-truck driver, help with the creation of educational content. In this sense, cognitive characteristics of the learners are somewhat considered in the process of creating educational content, as actual experience experts take part in it. However, no psycho-pedagogical, teaching (educational) or cognitive expert can be detected in the process of creating educational content.

EDUCATIONAL READINESS VERDICT

In conclusion, Heisterkamp's educational readiness is sufficient regarding the organization, design, evaluation and implementation of educational content, but somewhat lacks on the analysis of educational content. The absence of educational content analysis makes it impossible to determine whether the other

aspects such as design and implementation are executed correctly, and thus adding analysis of educational content and its effects would very much improve Heisterkamp's educational readiness.

ENTREPRENEURIAL READINESS

An additional factor that predetermines the organization's readiness to adopt e-learning is the enterprise itself (Psycharis, 2005). In the preliminary interviews the management board already stated the e-learning initiative receives top priority among other projects as of the now, which provides a good indication Heisterkamp considers e-learning a primary part of their strategy, and in line with entrepreneurial aims. The internal entrepreneurial environment therefore shows a high level of readiness on this behalf, however an organisations readiness depends on its external environment as well (Psycharis, 2005).

POLITICAL OBSTACLES

There are no direct (potential) political obstacles, i.e. obstacles related to the government or public affairs, other than continued enforcement of the already established laws and regulations Heisterkamp has to conform to, referred to in the 'legal obstacles' section. Changes for Heisterkamp business on both national and international level might occur any given time, however the legal, risk and quality manager employed by Heisterkamp keeps track of these potential threats and opportunities.

LEGAL OBSTACLES

Legal obstacles refer to potential obstacles arising for Heisterkamp due to the necessary conformation to the established laws and rules, where an example would be driver-contracts. In the interviews, questions rose whether Heisterkamp could actually make the use of e-learning mandatory by contract, as the assumption was drivers would not start using e-learning without some sort of coercion. Analysis of this potential legal problem resulted in a divide between contracted Dutch and German truck drivers on the one hand, and contracted truck drivers from Eastern-Europe on the other hand. Regarding the latter group, in contrast with expectations of some of the interviewees, there should be no legal obstacles for the e-learning initiative, not even making the use of e-learning contractually mandatory for the Eastern-European drivers. On contrary, opportunities arise for Heisterkamp due to legal constructions; According to an Heisterkamp expert on the field of Eastern-Europe employee (driver) contracts, all of the contracted chauffeurs are paid a monthly fixed salary, in which they are in service of Heisterkamp. This means the chauffeurs get paid whether they are on the road, on the premises, or even at home. The suggested combination of making the chauffeurs use the eventual e-learning program on the premises, as well as at home, can therefore be made contractually mandatory for all of the Eastern-European truck drivers, without stumbling on any legal obstacles.

Contracted Dutch and German truck drivers do not have this kind of contract, but instead get paid for actual hours of working activity. This means making the use of e-learning mandatory for Heisterkamp's Dutch and German drivers requires alternative measures. Adding the obligation for truck drivers to make use of Heisterkamp's e-learning program, to the to be signed contracts makes it mandatory for these truck drivers to use the program. In this way, the use of e-learning can be seen as a part of Heisterkamp's general rules, where truck drivers need to conform to. However, financial compensation will still be required for each hour a Dutch or German truck driver uses the e-learning program, should the employee choose to call Heisterkamp on this.

Heisterkamp's legal, risk & quality manager expects financial compensation

can be avoided while still making use of the e-learning program mandatory for the Dutch truck drivers, but this will require more research into these legalities.

CHANGE MANAGEMENT AND COMMUNICATION PLANS

Both a change management plan and a communication plan for the e-learning initiative were absent in the organization, and were said to be developed after the conclusion of this research. The mentioned creation of both plans will significantly increase Heisterkamp's entrepreneurial readiness for the adoption of e-learning, however consequently, the inexistence of both plans significantly reduces Heisterkamp's entrepreneurial readiness for this moment (Rosenberg, E-learning: Strategies for delivering knowledge in the digital age, 2000).

ENTREPRENEURIAL READINESS VERDICT

On behalf of entrepreneurial readiness, Heisterkamp appeared to be semi-ready. There are no expected external obstacles that might be a threat to the e-learning initiative regarding making the use of e-learning mandatory for the Eastern-European truck drivers, however obstacles might rise regarding making the use of e-learning mandatory for the Dutch and German truck drivers. Financial compensation seems to be inevitable regarding e-learning use for Dutch and German drivers as of now, consequently additional research into legalities is suggested to come up with ways to reduce any legal obstacles. Also, an internal obstacle is the lack of a change management plan and a communication plan for the e-learning initiative, which still needs to be created by Heisterkamp.

READINESS OF CULTURE

Open ended interviews with Heisterkamp's management team, concerning the encouragement, attitudes and behaviour of (e)learning in the organization, revealed that learning in general was not regarded to be embedded in the organizations culture and strategic considerations, until recently. The priority shift was the result of new regulations requiring organizations to school their employees. Heisterkamp's first step was assigning a member of the human resource department with the responsibility to create (e)learning content and manage the (e)learning process, if needed with collaboration of other members of the organization. Since then, learning was regarded as a central part of Heisterkamp's strategy by the management team, implying positive attitudes and behaviour towards (e)learning from the top of the organization. However, actual communication and encouragement towards learning was still regarded to be in its infancy by the management team. Also, Heisterkamp's management expected negative attitudes and behaviour towards (e)learning from their truck drivers.

Similarities and differences towards these expectations where found after comparing the aforementioned information to some actual attitudes and behaviour of Heisterkamp's truck drivers towards (e)learning. These were gained by open ended interviews with a small random sample of Heisterkamp's Dutch, German and Polish truck drivers.

While truck drivers possessed different levels of experience in using educational material for their working activities and learning in general, their opinions towards personal development by using learning materials, provided by their employers, were mostly positive. Almost every interviewee regarded personal development by educational content as very important, both for the individual and the organization, in contrast with management's expectations about attitudes towards (e)learning. In fact, only one respondent mentioned he did not have any experience with educational content, and would rather keep it that way, strongly

disliking learning. The main reason the truck drivers mentioned regarding the overall positive attitudes, was the presumed increased overall quality-level of the individual employee resulting from educational content use. Reducing damage caused, and increasing truck - and truck driver safety were the most mentioned aspects of this presumed quality-increase. Also, the interviewees regarded communication towards learning and personal development to be good, as the truck drivers were frequently confronted with the intentions of the organization of employee development, especially external educational programs, through means of flyers, magazines, messages in CarrierWeb, and messages from the human resource department. However, although these apparent positive attitudes, beliefs and communication towards learning and personal development, interviewees reported that they 'barely' made use of internal educational content during their work at Heisterkamp. For example the drivers manual did not see much use, except for one interviewee recalling using it 'once or twice a year'. The main reason for this was the mentioned 'lack of time' , and in some cases the interviewee simply did not have the drivers manual in possession (lack of material). An explanation for the rare use of internal educational content could be that actual encouragement to internal educational content was less noticed by the interviewees. One interviewee indicated organizational encouragement was only regarded to be present after actual mistakes were made, as in punitive encouragement.

Greater variation in interviewee responses was found when asking for attitudes towards potential e-learning use, after explaining the principles and implications of e-learning to the interviewees. Three attitudes towards e-learning were detected; one being positive and with intentions to use such a system if it was provided; the other one being positive but with hesitations towards using such a system if it was provided; the last one being negative overall, and consequently no voluntary intentions to use such a system if it was provided. Again in contrary to the expectations of the management, the first attitude was the most mentioned by the interviewees. The interviewees recalling this attitude towards e-learning mentioned they expected it to be a good way to keep their knowledge up-to-date, more convenient than learning from books, and expected to have enough time available, during work and/or weekends, to actually use a potential e-learning system. This time-aspect was the main reason for hesitation for the group of interviewees belonging in the second group. They did regard (e)learning and development as very important and very much needed, but did not expect to have time available in the weekends to use an e-learning system. The last group of interviewees, belonging to the third category of (negative) attitudes towards e-learning, simply did not like the idea of e-learning, and consequently using it for their personal development. This had to do with negative experiences with computers and learning in general.

Also, one interviewee recalled e-learning being useless for him personally as the interviewee plans to retire within the year due to age, and expected contemporaries to share this opinion. The management initial intentions for the e-learning initiative were that e-learning should be for everyone, i.e. every truck driver. This implied the need for communication and encouragement towards this specific group of truck drivers, seeing the organization deploys quite a lot of these 'older' truck drivers.

READINESS OF CULTURE VERDICT

The management team of Heisterkamp regarded encouragement and communication towards (e)learning to be still in its infancy, and therefore lacking. Also, negative attitudes and behaviour were expected from employees towards

learning, and consequently e-learning. Interviews with a sample of Heisterkamp's truck drivers revealed that employees' attitudes and beliefs towards learning is not as bad as the management expected. Of course, a part of the truck drivers severely dislikes learning in general, and therefore has a negative attitude towards a potential e-learning initiative, but data from the interviews suggests employees are mostly positive towards learning and the potential e-learning initiative. Communication towards employees about Heisterkamp's thoughts and beliefs about personal development and learning was seen as good, however encouragement towards learning still leaves room for improvement, increasing the overall readiness of culture. Especially the 'older' truck drivers will need more encouragement and communication to be brought on the same line as the organization's regarding personal development using educational content.

LEADERSHIP'S READINESS

As mentioned in the literature review, a link can be detected between readiness of culture and readiness of leadership, as the development of a culture that embraces (e)learning reveals the existence of support for this culture by the senior management (Psycharis, 2005). The analysis of the readiness of culture therefore functioned as the input for the analysis of the readiness of leadership. Conclusively, the data from the readiness of culture analysis showed that not all of the intended end-users of the e-learning initiative possess positive attitudes towards e-learning, and learning in general, indicates even more support should be given by the senior management to convert negative attitudes into positive ones, before commencing an e-learning initiative.

An explanation why an optimal (e)learning culture is not yet optimized might be the infancy of the shift of (e)learning's position in Heisterkamp's strategy, seeing it was only initiated recently. The beliefs, views and attitudes belonging to this new strategy clearly still have to be communicated and firmly planted in the rest of the organization. This is needed to commence the transformation of Heisterkamp, and thus it's employees, towards acceptance of e-learning, and learning in general, as a natural part of its everyday work (Rosenberg, E-learning: Strategies for delivering knowledge in the digital age, 2000).

The employment of a member of the human resource department dedicated to managing the learning and development of the truck drivers shows commitment and support of Heisterkamp's management, and indicates readiness. The literature review showed the administration is expected to recognize, reward and enhance the participation in e-learning (Psycharis, 2005). Recognition is planned by tracking employee online activity, which is already implemented for the online test for example: test results are automatically send to the human resource department. Rewards and participation enhancement are not yet executed by the management of the human resource department.

LEADERSHIP'S READINESS VERDICT

In general, management's beliefs, views and attitudes belonging to the newly developed strategy still have to be communicated and firmly planted in the rest of the organization. Administratively speaking however things are already looking good, especially with the assignment of a dedicated employees to manage the learning and development of the employees. Reward and participation enhancement-plans however still need to be created in order to positively alter employee attitudes towards e-learning, which should indeed start before the development of e-learning (Psycharis, 2005).

ECONOMIC READINESS (CONTINUED)

Continued from 'economic readiness' (Page 20) due to chronological reasons.

RETURN ON INVESTMENT (ROI)

Estimating the return on investment regarding e-learning, implies comparing the identified costs of the student and educator, and any direct costs associated with current training methods, against the direct costs associated with implementing e-learning (Berke & Wiseman, 2003). When we compare the current training content with the to be implemented e-learning content however, it gets clear the to be implemented e-learning content does not directly replace the current educational content that is used by Heisterkamp. For example, Heisterkamp wants to keep the introduction course in a face-to-face setting, while also offering it via e-learning should an employee whishes to view it again. In general, most training content, like damage prevention and tachometer courses, will still have to be created and implemented for the e-learning initiative whilst thus not fully replacing current educational content. Basically, the e-learning initiative will be functioning as an addition to the current practices, and therefore there will not be any positive return on investment regarding comparing costs of the student and educator, and any direct costs associated with current training methods, against the direct costs associated with implementing e-learning. The only exception of a potential direct replacement of current educational content into an online method could be the drivers manual. Estimated was that some 500 of these are distributed among new employee every year, costing five euro's a piece, resulting in an estimated 2500 euro's in savings. However opinions are divided whether legalities obligate Heisterkamp into having to distribute physical copies to their truck drivers.

At this point it became clear an estimation of the return on investment is not appropriate in Heisterkamp's case, as the actual savings in terms of capital will be acquired through the expected quality increase of the truck drivers, and not by replacing current educational content and training methods. Indeed, capital is expected to be acquired through implementation of e-learning, and thereby reducing costs of damage caused and fines received, and at the same time increasing productivity by reducing the amount of mistakes made by Heisterkamp's truck drivers. However these kind of returns cannot be realistically estimated until the various courses are implemented and analyzed during a specific time period, keeping track of employee damage, fines and productivity.

COST ESTIMATION

This leaves the last estimation possibility, which is an estimation of exclusively the direct and indirect costs of Heisterkamp's e-learning initiative. Direct costs are relatively small, as Heisterkamp's technological readiness concurs. Rooms with e-learning equipment, i.e. computers and a working internet connection, are already installed at the various Heisterkamp locations. Upgrading these rooms with additional computers was said to increase technological readiness, and is realistically achievable under 1000 euro per computer added to the various computer rooms.

Indirect costs on the other hand, i.e. hours of labour needed from the IT and human resource department, are very high. The manager of Heisterkamp's IT department estimates 240 hours are necessary to create a basic platform/system that supports e-learning content, which at the same time has the ability to monitor employee activity. Actual online simulations, accessory to the planned CarrierWeb and tachometer courses, will take additional time to complete and optimize. Moreover,

these 240 hours of labour were estimated to compare to roughly nine months, with the current capacity of the IT department, as other projects are in development as well. Heisterkamp's IT manager also believes shifting priority within these projects will only result in an efficiency-loss of all the projects, stating all of the IT projects already receive first priority at this time. This implies the potential e-learning initiative will not see completion until mid 2015, at the earliest, due to the current (bottleneck) capacity of the IT department.

Another source of indirect costs is the time it takes the human resource department to develop future educational content, among which the planned damage prevention, tachometer and CarrierWeb courses, as these also have to be created. To be in parallel with the IT department's estimate of nine months, the human resource department, in collaboration with other department where necessary, will thus have to create the planned content within nine months. To illustrate, the earlier mentioned online test took about six months until completion. The reason behind this large amount of time again traces back to capacity, according to the respective employees. The educational content in the form of an online test had to be created in collaboration with several employees (and different departments), next to the other daily working activities of these employees. Priority was not given for the creation of educational content, which resulted in the earlier mentioned six months time period until completion in different languages. For the planned educational content however most of the foundation has already been created, and the employees concerned with developing the content perceive nine months should be well enough time to come up with the desired content. This in combination with the newly developed strategy, placing education higher in Heisterkamp's strategy, should ensure educational content to be continuously created within an acceptable time-frame.

The last source of indirect costs in terms of labour hours is assigning a ('champion') project group for the communication and encouragement towards the employees, and basically managing the change of implementing e-learning at Heisterkamp. This amount of labour hours this group needs should not be extensive, as individual tasks, for example writing the communication plan, can be divided among group members, making use of their individual expertise.

ECONOMIC READINESS VERDICT

The newly developed strategy placing education and development higher in Heisterkamp's hierarchy should result in high investment commitment and indicate high economic readiness. Indeed the question concerning Heisterkamp's economic readiness depended on whether the management was willing to accept that the e-learning initiative will take a relatively large amount of time (nine months) of the IT department, with the current capacity, and to lesser extend the human resource department and the ('champion') group managing the change.

REFLECTION: PRELIMINERY INTERVIEW TOPICS

The prioritised preliminary interview topics receive new reflection with new-found knowledge from the organizational readiness analysis, to see how (or if) the expected challenges (topics) can be dealt with. The eleven topics are referred to in the previously established order of importance.

LACK OF CAPACITY

All of the interviewees severly questioned the capacity of the IT department, indicating a potential threat for the e-learning initiative. Analysis following an attempt to quantify a potential e-learning

initiative showed that the capacity is indeed low, within Heisterkamp's IT department. Heisterkamp's IT manager regards skills and capabilities are well present, however it would take an estimated nine months to realize a self-developed e-learning program due to other projects that are in development. This development time is dramatically increased due to the current capacity, and the result is that an estimated 240 hours of labour translates into the previously mentioned nine months until completion.

Conclusively, the capacity of the IT department isn't necessarily lacking to realize actual completion, however the capacity is lacking regarding meeting the potential realization time (in hours of labour). Heisterkamp's management will have to decide what to do with this information, where three suggestions are imaginable;

- Increasing capacity by hiring 240 hours of labour to reach minimum completion time.
- Accepting a nine months completion time.
- Relinquishing the e-learning initiative.

HIGH EMPLOYEE TURNOVER

Employee turnover, in this case truck driver turnover, was mentioned by the interviewees as a potential threat to the effectiveness of e-learning. Indeed, excessive turnover rates in any organization ultimately lead to higher costs in hiring and training and reduced service capacity (Flippo, 1980). The existing literature however concerning organizational readiness for e-learning criteria, or e-learning in general, did not refer to employee turnover and it's potential effects on organizational readiness for e-learning. Hinkin and Tracey (2000) even recall an increase in individual and organisational performance, by providing consistent and accurate content at the right time, may be linked to a reduction in high employee turnover (Hinkin & Tracey, 2000). Other researchers agree, training in general is considered to be a key strategic organizational tool and is associated with higher profits and lower employee turnover (Lee, Hsieh, & Ma, 2011)

This certainly does not guarantee high employee turnover can be ignored for any e-learning initiative, however for this research there is no reason to believe high turnover somehow negatively influences e-learning. After all, Heisterkamp wants to increase employee quality in order to reduce eventual costs made. If this reduction in costs has been realized by using training, and thus e-learning in this case, it should not matter if/when employees leave the company afterwards. It should even be more out of the question whether e-learning is worth it, while having a relatively high employee turnover level, as no extra resources (other than server capacity) are used for an individual employee once an e-learning system has been created, in contrary to traditional teaching.

The expressed concerns of the interviewees about Heisterkamp's high employee turnover in relation with e-learning however suggests employee turnover's relationship with e-learning needs to be closely monitored should Heisterkamp implement e-learning. This topic certainly establishes new foundation for further (future) research.

E-LEARNING ALLOCATION CHALLENGES: TIME AND PLACE

Some practical issues came to the discussion from the preliminary interviews, in terms of where and when the chauffeurs would have to use an eventual e-learning program. Integrating e-learning into the CarrierWeb system on Heisterkamp's trucks presents obstacles in both hardware and software regarding e-learning potential, as well as limiting Heisterkamp's

full intellectual property of a developed e-learning program. E-learning on the premises, as well as e-learning using own equipment, is expected to be most appropriate for Heisterkamp due to high technological readiness. Indeed, the required hardware, software and connectivity are well present and sufficient on the various Heisterkamp locations. Moreover, the proposed computer rooms are relatively easy and affordable to upgrade, if necessary. The ideal time for the truck drivers to use the system on the premises is when they're resting in between jobs, and basically not doing anything. In practice, the weekends are ideally suited especially for Eastern-European drivers spending their nights on the various Heisterkamp locations. The ideal time for truck drivers e-learning using their own equipment at home, especially Dutch and German drivers, is up to the truck drivers themselves, encouraged by Heisterkamp's preferences in terms of frequency, and for the Eastern-European truck drivers encouraged by contractual agreements.

E-LEARNING'S FINANCIAL IMPLICATIONS

The financial aspects of e-learning in terms of costs only have (negative) implications if the management defines them as too high. The economic readiness analysis and the preliminary interviews made clear the devotion of capital, i.e. investment commitment, does have its limit. Due to low capacity, the potential e-learning initiative will not see completion until mid 2015, at the earliest, coming in at 240 hours of labour being the biggest source of costs. Direct costs from setting up the computer rooms on various Heisterkamp locations and labour hours from both the human resource department and the ('champion') dedicated group managing the change will have substantially lower financial implications for Heisterkamp. More indirect costs will present itself after implementation, especially labour hours from the human resource department, as training employees involves more than just information provision; it requires practice, feedback, and guidance (Welsh, Wanberg, Brown, & Simmering, 2003). This set of activities however is already part of the daily activities of the human resource department, and managing the e-learning process should thus align quite well with the current situation.

The benefits in terms of actual savings (positive financial implications) will be acquired through the expected quality increase of the truck drivers, in contrary to directly replacing current educational content and training methods (direct savings). However this expected reduction in damage caused, fines received, and at the same time increasing productivity by reducing the amount of mistakes made by Heisterkamp's truck drivers cannot be realistically estimated until the various courses are implemented and analyzed during a specific time period.

E-LEARNING SUPERVISION AND CONTROL CHALLENGES

Physical absence, thus not being able to see how and if the truck drivers actually use e-learning, was mentioned as a potential problem, challenge, and disadvantage of organizational e-learning, compared to face-to-face training. In comparison with traditional face-to-face classroom learning that centers on instructors who have control over class content and learning process, e-learning indeed offers a learner-centered, mostly self paced learning environment (Zhang, Zhao, Zhou, & Nunamaker, 2004).

The manager of the IT department confirmed activity tracking can and will be build in the potential e-learning system should Heisterkamp's management give the fiat for building it. This deal with most of the challenges regarding supervision. This data and activity tracking, combined with the earlier mentioned contractual

obligation for all of the Eastern-European truck drivers regarding e-learning, should ensure Heisterkamp with means to supervise and control organizational e-learning.

KNOWLEDGE TRANSFER CAPABILITIES

Interviewees expressed doubts whether the truck drivers of Heisterkamp would know how to use an e-learning system, and if they are actually capable of extracting knowledge from it. Also, questions ascended from the preliminary interviews whether the human resource department would have the capabilities to create new learning programs, and transfer relevant knowledge to the truck drivers.

Heisterkamp's truck indeed drivers do not come in contact with web technology as often as the office staff during their daily work activities. The interview data used for the conclusions in the readiness of culture analysis (Page 26-28) showed some truck drivers had negative experiences with learning and computers, and therefore possessed negative attitudes towards a potential e-learning initiative. Regarding potential lack of ICT-affinity, initial computer skills indeed affect learner satisfaction (Hong, 2002; Thurmond, Wambach, & Connors, 2002). An analysis of every truck driver's web technology experience and computer skills however was regarded as too time consuming for this research. Instead countermeasures were offered against technology inexperience, which conveniently overlap with the measures against technophobia, mentioned in the technological readiness analysis (Page 19,20). The measures against technophobia contain steps that will deal with any potential employee web technology inexperience as well, and therefore implementing all of the steps against technophobia help Heisterkamp dealing with any truck drivers' technological inexperience.

Regarding the questions whether the human resource department would have the capabilities to create new learning programs; all of the detected educational content present at Heisterkamp was created by the organization itself, indicating Heisterkamp certainly possesses the ability (educational readiness) to develop/create new educational content. However transferring relevant knowledge to the truck drivers, i.e. truck drivers extracting knowledge from educational content was harder to detect. Online tests, the human resource department uses to see whether truck drivers learned from the driver introduction, indicated Heisterkamp is already testing extracting of knowledge in theory. However besides that no analysis of educational content and its effects in practice were detected.

LACK OF KNOWLEDGE AND EXPERIENCE

Creating, implementing and maintaining an e-learning system was assumed by the interviewees to require certain levels of knowledge, capacity, time, and financial means for successfully realization. Indeed, e-learning is complicated; and underestimating that complexity will lead to underestimating needs, future problems, and costs (Rosenberg, E-learning: Strategies for delivering knowledge in the digital age, 2001). Most of the interviewees had serious doubts if the needed level of knowledge and competences were present within the organization.

The presence of Carnell & Shank's (2003) and Koska's (1992) 'champion', or in other words someone who has the knowledge, skills, responsibility and authority to lead the organization toward adaptations of an innovation, could not be detected in a single person regarding this research's case of e-learning and its implementation. No one had experience with e-learning, which is also why this research was initiated in the first place, but also because

Heisterkamp does not make use of a change manager or innovation manager. However all of the necessary aspects of a theoretical 'champion' are, and will be present, within the specially formed project group Heisterkamp plans to use. The detected knowledge about creating and implementing educational content will be brought to the group by the human resource department. Likewise, a member of the IT department should be chosen to arrange technicalities and the setup of the suggested computer labs.

CULTURAL DIFFERENCES AMONG HEISTERKAMP EMPLOYEES

The wide differences in countries of origin among truck drivers was regarded as a potential threat for organizatonal e-learning at Heisterkamp. According to the interviewees, these different origins imply different cultures, which in their turn imply different norms and values and thus opinions towards (e)learning. More important, lingual challenges were expected for the e-learning system. Existing literature concerning organizational readiness for e-learning criteria however did not refer to employee countries of origin regarding organizational readiness for e-learning. Conclusively, for this research there was no reason to believe differences in country of origin somehow negatively influences, let alone is a threat, to organizational e-learning, when focussing on organizational readiness. Indeed, the geographical differences, i.e. residences of employees, posed opportunities such as contracually obliging e-learning for Eastern-European truck drivers of Heisterkamp. Moreover, lingual challenges can, and are already overcome, by including human resource staff members from the different countries present at Heisterkamp in the creation of educational content.

NATIONAL CULTURE AND E-LEARNING USABILITY

Downey et al. (2005) are one of few researchers who investigated possible relationships between national culture and the usability of an e-learning system. Their work was not linked to organizational readiness, but purely detecting a potential relationship between the two variables. Usability was defined as; 'the measure of the quality of user experience of interacting with something' (Downey, Wentling, Wentling, & Wadsworth, 2005). The findings of the research, as well as the expressed concern of the interviewees, deemed further analysis of national culture's effect on e-learning necessary.

The study uses Hofstede's cultural dimensions (1980) and Nielsen's usability attributes (1993), to reveal that high (above 50 points) uncertainty avoidance cultures found the e-learning system most frustrating to use (Downey, Wentling, Wentling, & Wadsworth, 2005). The uncertainty avoidance cultural dimension focuses on how cultures adapt to changes and cope with uncertainty (Hofstede, 1980). The study also found that individuals from cultures with high (above 50 points) power distance indicators (e.g. people who are more accepting of uneven power distribution) rated the overall usability higher than individuals from low power distance indicator cultures (Downey, Wentling, Wentling, & Wadsworth, 2005). The power distance cultural dimension focuses on the nature of human relationship in terms of hierarchy (Hofstede, 1980).

For Heisterkamp this implies the organization can expect their Polish end-users to get frustrated, as they originate from a high uncertainty avoidance culture (93 points):

'*Poland scores 93 on this dimension and thus has a very high preference for avoiding uncertainty. Countries exhibiting high uncertainty avoidance maintain rigid codes of belief and behaviour and are intolerant of unorthodox behaviour and ideas. In these cultures there is an*

emotional need for rules (even if the rules never seem to work) time is money, people have an inner urge to be busy and work hard, precision and punctuality are the norm, innovation may be resisted, security is an important element in individual motivation' - (Hofstede, http://geert-hofstede.com/poland.html)

Also, better end-user experience can be expected from Heisterkamp's end-users originating from high power distance cultures, i.e. Slovakian employees (100 points):

'*With a score of 100 points Slovakia is at the highest end of this dimension compared to other countries. In societies scoring high on Power distance it is perfectly accepted that some people have more power than others. It is accepted and expected that these people also use their power. Not in a negative way but to create clarity and structure for people around them. The ideal boss can therefore be compared with a "good father" who supervises you, is highly visible and tells you what to do. Hierarchical organizations are normal. A key issue for foreigners to understand is that in spite of the very high score on PDI, a manager still has to prove him or herself in order to make people respect and accept decisions from above or the (foreign) headquarter. Visibility and showing results is key'* - (Hofstede, http://geert-hofstede.com/poland.html)

Following this information, Downey et al. (2005) state that trainers could consider the level of leadership expected by the learners:

'*Learners from cultures where strong authority figures are common (e.g. those from high power indicator cultures) will expect greater leadership and guidance from their instructors. As a result, training might take on a more traditional teacher-centered approach, whereas individuals from other cultures may desire a more student-centered approach'* - (Downey, Wentling, Wentling, & Wadsworth, 2005)

It should however be noted that the study of Downey et al. (2005) is subjected to some limitations. Local facets of culture that were present could be neglected by Hofstede's cultural dimensions, and another limitation of the study is the sample size (Downey, Wentling, Wentling, & Wadsworth, 2005). However, the researchers still regarded Hofstede's cultural dimensions (1980) as the most relevant, as it has been used and tested by many researchers before them (Bernard, 2000; Dunbar, 1991; Evers and Day, 1997; Fernandez, 1995; Marcus and Gould, 2000). Therefore, these findings *could* provide human resource educators, Heisterkamp's human resource staff in this case, with information that could assist them in understanding the cultural implications of using e-learning systems in various cultural settings (Downey, Wentling, Wentling, & Wadsworth, 2005).

ORGANIZATIONAL RESISTANCE TOWARDS CHANGE

Some interviewees predicted a significant level of resistance among employees of Heisterkamp towards change. While change resistance is a normal and natural response to change (Coghlan, 1993), failure of many corporate change programs is indeed often directly attributable to employee resistance (Maurer, 1997; Spiker & Lesser, 1995).

The organizational readiness analysis did not stumble on any situations that could not be dealt with, probably since e-learning at Heisterkamp does not require any drastic new measures or ways of doing business. The human resource department can continue managing the educational process more or less in the same way they already do. The IT department does not have to venture outside its comfort zone with the creation of an e-learning system. All of the competences and abilities are there, it only

requires some time. This, in combination with Heisterkamp's newly developed strategy moving employee development higher in the hierarchy, might be the reason there was not much organizational resistance detected in this research. The low Borda score of this topic seems to correspond with reality in this case.

END-USER RESISTANCE TOWARDS CHANGE

From the preliminery interviews, it became clear that the previously mentioned resistance towards change certainly was expected to apply for the end-users of the e-learning system. Every interviewee expected Heisterkamp's truck drivers to dislike information regarding personal development by e-learning, and learning programs in general, for that matter.

Similarities and differences towards these expectations where found after comparing this to some actual attitudes and behaviour of Heisterkamp's truck drivers towards (e)learning. Almost every interviewee regarded personal development by educational content as very important, both for the individual and the organization. However, greater variation in interviewee responses were found towards potential e-learning use: one being positive and with intentions to use such a system if it was provided; the other one being positive but with hesitations towards using such a system if it was provided; the last one being negative overall, and consequently no voluntary intentions to use such a system if it was provided. While the first was overall mostly mentioned, it indeed shows some resistance towards the potential e-learning initiative, as the management expected. The main sources fuelling end-user resistance were:

- Expected lack of time to use e-learning.
- Negative experiences with computers, and computer inexperience in general.
- Negative experience with learning in general.
- Failing to see usefulness of (e)learning, due to (old) age and related retirement plans.

Potential solutions to the detected sources of resistance are further elaborated below.

LACK OF TIME

The expected lack of time should be partly solved by the allocation of e-learning: the provision of computer labs makes it possible for the truck drivers to use e-learning on the premises. Also, the lack of time argument can be made redundant for the Eastern-European by Heisterkamp due to contractual obligation.

NEGATIVE COMPUTER EXPERIENCE AND COMPUTER INEXPERIENCE

Both the truck drivers' negative experiences with computers and inexperience with computers can, and should be solved by implementing the three steps against technophobia and technology (computer) inexperience mentioned in the technological readiness analysis (Page 19,20) (Sivakumaran & Lux, 2011).

The first step is recognizing the purpose behind the computer usage, and orienting learners to the benefits of knowing how to use computers in an efficient manner. The second step is creating and nurturing a positive learning environment, where workshops should be conducted by staffs that have positive attitudes towards students, especially adult learners, who do not know how to use computers. The last step is providing a support system for learners in the form of a dedicated go-to person or staff member, where the instructor can also spend addition one-on-one time with students in need of assistance at the computer and be available outside of class to answer students' questions.

All of these steps are elaborated more extensively in the technological readiness analysis (Page 19, 20).

NEGATIVE EXPERIENCE WITH LEARNING IN GENERAL

Not much can be done about the truck drivers who possess negative experiences towards learning in general. All Heisterkamp can do is explain and why they think learning is necessary, and try to project the strategy and vision of the organization on their employees, trough communication and encouragement plans. Also with the development of educational content a variety of multi-media should be used, such as audio and video (Psycharis, 2005), to increase satisfaction and reduce the risk of negative learning experiences. The absence of a psycho-pedagogical, teaching (educational) or cognitive expert however makes this specific source of end-user resistance difficult to deal with for Heisterkamp.

FAILING TO SEE USEFULLNESS OF (E)LEARNING DUE TO AGE

This specific source of resistance coming from 'older' truck drivers, is not fuelled by potential change, but more by personal circumstances. Due to age and upcoming retirement plans 'older' employees fail to see any usefulness in personal development and consequently (e)learning. The management initial intentions for the e-learning initiative however were that e-learning should be for everyone, i.e. every truck driver Heisterkamp employs. The interview data therefore implied the need for a communication and encouragement plan towards this specific group of truck drivers, seeing the organization deploys quite a lot of these 'older' truck drivers.

TECHNOLOGY ACCEPTANCE MODEL

To help deal with all of these potential sources of end-user resistance, Chen (2008) indeed suggests the attitude of the employees should be changed when trying to implement a culture shift to support e-learning (Chen, 2008). As a means to do this, he proposes the Technology Acceptance Model (TAM) (Davis, Bagozzi, & Warshaw, 1989):

'First the company will need to change the attitudes of the employees and make them believe in the usefulness of e-learning. They will also need to focus on the fact that e-learning is easy to use, for instance, by promoting that fact that it is available twenty-four hours a day, three-hundred sixty-five days a year. By focusing on these key points employees will start to change their behavior toward e-learning and eventually accept its usage' - (Chen, 2008)

For Heisterkamp this implies the already suggested creation of communication and encouragement plans towards e-learning should be developed along the lines of the Technology Acceptance Model (TAM).

E-LEARNING PLATFORM DRAWBACKS

Interviewees critically questioned what platform should be chosen/used to accommodate the eventual e-learning system, as individual platforms were expected to come with financial, practical and technical downsides, according the interviewees.The perfect running of systems and devices is indeed regarded as very relevant for e-learning activities, as equipment malfunctions can produce a great detriment for an e-learning course (Campanella, et al., 2008). After prioritising, this particular topic appeared to be at the bottom of the interviewees concern, thus expecting the topic to be easily analyzed and solved. Indeed, the technological readiness analysis showed that e-learning through means of the CarrierWeb system would present certain obstacles in both hardware and software, which rendered this potential platform as inappropriate. E-learning simply via computers on the premises and truck drivers own equipment was deemed more appropriate, especially seeing Heisterkamp's (good) level of

technological readiness, in terms of the technological readiness criteria; the required hardware, software and connectivity are sufficient and well present at Heisterkamp's various locations.

DISCUSSION

Now that the theoretical and empirical parts of the research have been finalized, organizational topics could be matched to e-learning readiness theory, to see and discuss how/if they interact (table 4). Table 4 for example shows three (expected) organizational topics/challenges, could be linked, and dealt with, by consulting technological readiness theory. Likewise, readiness of culture criteria covered two organizational challenges/topics. However, gaps (marked with 'X') could also be detected in theory, as two (expected) organizational topics/challenges for e-learning could not be covered by theory concerning organizational readiness for e-learning. Indeed, organizational readiness theory seems to fall short in covering empirical topics as employee turnover and cultural differences among employees, even though these were collectively weighted heavier than most of the other topics/challenges.

The other way around, gaps (marked with '-') could also be detected in the organization's view/understanding towards e-learning. For example Heisterkamp, in this case reflected by carefully selected interviewees, seems to neglect the importance of readiness of content, entrepreneurial readiness and leaderships readiness, be it deliberate or simply unknowing. The organizational readiness analysis however showed Heisterkamp has to improve regarding these criteria.

Conclusively, both theory and empirical data complement each other in this research. Focusing only on the organizational (empirical) topics/challenges would leave big gaps in an overall organizational readiness analysis, in this case readiness of content, entrepreneurial readiness and leadership's readiness would be neglected. On the other hand, only using organizational readiness to e-learning theory would not quite suffice in dealing with all organizational concerns regarding e-learning, in this case high employee turnover and cultural differences among employees would be neglected. More extensive reflection on organizational readiness to e-learning (theory) versus organizational topics/challenges (practice) was done below.

REFLECTION: THEORY VS. PRACTICE

'Technological readiness', part of the organizational readiness for e-learning criteria, had three (empirical)

Table 4; Linking organizational topics (practice) to organizational readiness criteria (theory)

Technological Readiness	Human Resource Readiness	Economic Readiness	Readiness of Content	Educational Readiness	Entrepreneurial Readiness	Readiness of Culture	Leadership Readiness	X
E-learning allocation challenges	*Lack of knowledge and experience*	*Lack of capacity*	-	*Knowledge transfer capabilities*	-	*Organizational Resistance towards change*	-	*High employee turnover*
Supervision and control challenges		*Financial implications*				*End-user resistance towards change*		*Cultural differences among Heisterkamp employees*
E-learning platform drawbacks								

organizational topics linked, indicating collective concern on this behalf. Moreover, two out of these three topics also received high prioritization ; 3rd and 5th place out of eleven. The technological readiness analysis however did not stumble on many obstacles, and for every obstacle solutions were proposed. The organizational topics were also dealt with and reflected on with relative ease.

Only one organizational topic could be linked to 'human resource readiness'. This topic received below average prioritization, i.e. 7th place out of eleven. Both the human resource readiness analysis and the reflection of the organizational (empirical) topic, did not detect any insuperable obstacles.

Two organizational topics were linked to the 'economic readiness', and both received very high prioritization; 1st and 4th place out of eleven. The economic readiness analysis showed the investment commitment, i.e. the devotion of capital, does have its limits. The detected (very low) capacity of the IT department to actually built a potential e-learning system has the biggest (negative) influence on the financial implications. Logical solutions were offered following Heisterkamp's investment commitment, in combination with the financial implications and capacity. A meeting to discuss the financial implications and the capacity issue is strongly recommended regarding economic readiness to e-learning.

'Readiness of content', part of the organizational readiness for e-learning criteria, could not be linked to any of the eleven organizational topics. The reason why the interviewees did not bring up any topics concerning e-learning content could be anything from not knowing or acknowledging the importance, to thinking there is enough, relevant, content to support an e-learning initiative. The readiness of content analysis however showed that while there is enough educational content present at Heisterkamp, all of it will still have to be transferred into online material and online courses before it can be put to use concerning an e-learning initiative.

'Educational readiness' could be linked to one organizational topic; Heisterkamp's knowledge transfer capabilities. This topic embodies the exact average in terms of prioritization, i.e. 6th place out of eleven. The educational readiness analysis showed the design, evaluation and implementation of educational content appear to be sufficient at Heisterkamp. Analysis however, thus tracking whether the educational content actually has an effect on the external environment Heisterkamp wanted to change (improve), seems to be neglected by Heisterkamp, and was thus recommended in this research.

'Entrepreneurial readiness' was another example of theory complementing empirics, as no organizational topics could be linked to this particular organizational readiness for e-learning criterion. However the entrepreneurial readiness analysis showed the importance of this criterion, as potential obstacles might rise regarding making the use of e-learning mandatory for the Dutch and German truck drivers. Financial compensation seems to be inevitable in this case, and consequently additional research into legalities is suggested to come up with ways to reduce any legal obstacles. Also, a potential internal obstacle is the lack of a change management plan and a communication plan for the e-learning initiative, which still have to be created by Heisterkamp.

Two organizational topics were linked to the 'readiness of culture, and both received very low prioritization; 9th and 10th place out of eleven. The organizational readiness analysis did not stumble on any situations that could not be dealt with, also because e-learning at Heisterkamp does not require

any drastic new measures or ways of doing business. The low prioritization of the topic of 'organizational resistance towards change' therefore corresponds with the findings, however the low prioritization for the topic of 'end-user resistance towards change' does not. Resistance towards the potential e-learning initiative was indeed found, and various sources fuelling end-user resistance were detected. Different solutions were offered to reduce the various sources of resistance, however some of these sources of resistance are expected to be more difficult to deal with than others.

The last organizational readiness for e-learning criterion is 'leadership readiness'. For the third time, no organizational topics could be linked to this particular criterion. The reason why the interviewees did not bring up any topics concerning leadership readiness could again be anything from not knowing or acknowledging the importance of leadership regarding e-learning readiness, to thinking there already is adequate leadership to support an e-learning initiative. The leadership readiness analysis however indicated even more support should be given by the senior management to convert negative attitudes into positive ones, before commencing an e-learning initiative. The beliefs, views and attitudes belonging to Heisterkamp's new educational strategy still have to be communicated and firmly planted in the rest of the organization.

As mentioned before, organizational readiness for e-learning theory falls short to deal with two organizational topics; 'high employee turnover' and 'cultural differences among Heisterkamp employees'. The first topic also received very high prioritisation, i.e. 2nd place out of eleven. The existing literature concerning organizational readiness for e-learning criteria, or e-learning in general, did not refer to employee turnover having any negative potential effects on organizational readiness for e-learning, or the other way around. On contrary, training in general is normally associated with higher profits and lower employee turnover (Lee, Hsieh, & Ma, 2011) (Hinkin & Tracey, 2000). The expressed concerns of the interviewees about Heisterkamp's high employee turnover in relation with e-learning however suggests employee turnover's relationship with e-learning needs to be closely monitored should Heisterkamp implement e-learning. This relationship following the organizational topic was mentioned as potentially new foundation for further (future) research.

The second non-linked organizational topic received below average prioritization, i.e. 8th place out of eleven. Existing literature concerning organizational readiness for e-learning criteria did not refer to employee countries of origin regarding organizational readiness for e-learning. Literature outside organizational readiness to e-learning was consulted to provide Heisterkamp with information that could assist them in understanding the cultural implications of using e-learning systems in various cultural settings (Downey, Wentling, Wentling, & Wadsworth, 2005).

LIMITATIONS

Some limitations can also be detected for this research. From an empirical point of view, eight interviews cannot be expected to fully cover and extract all (problematic) topics concerned with e-learning and its implementation. Indeed, eight interviews resulted in only eleven topics that were expected to be problematic for Heisterkamp. However, these eight interviewees were carefully selected and cover all departments and managerial functions across the organization.
This is why these eight interviews and their extracted topics concerning (problematic) e-learning implementation work well with the derived theoretical criteria. Together they should cover all relevant areas

concerning Heisterkamp's organizational readiness for e-learning.
Following this statement, one might recall this research might be a bit too contextual to serve useful for other organizations. Indeed, the derived topics from the interviewees are probably applicable only to Heisterkamp, however the theoretical framework and the derived criteria to deal with these topics are not contextual, and are applicable to any organization that considers using e-learning.

RECOMMENDATIONS

The following recommendations were presented throughout this research in order to increase Heisterkamp's organizational readiness for e-learning, and deal with the expected problems regarding organizational e-learning. A *high* or *low* priority has been added to the recommendations, based on the findings of the organizational readiness analysis and the reflection of the organizational topics. A *high* priority reflects a relatively big gap between the current and desired situation. A *low* priority on the other end reflects a relatively smaller gap between the current and desired situation. Also, function and/or department -wise involvement was attempted to be given following individual recommendations.

PREPARE/INSTALL COMPUTER LABS

Priority: Low

E-learning on the premises was suggested in this research, calling for the various locations to be technologically ready. Low priority is given for this recommendation seeing Heisterkamp's level of technological readiness, in terms of the technological readiness criteria; the required hardware, software and connectivity, as these are sufficient and well present at Heisterkamp's various locations. Even more, upgrading these rooms with additional computers can easily be done at any time, and is realistically achievable under 1000 euro per computer added. Heisterkamp's IT department should take this suggested recommendation under control nature due to the required technological expertise.

IMPLEMENT STEPS AGAINST TECHNOPHOBIA AND TECHNOLOGICAL INEXPERIENCE

Priority: Low

Technophobia was added to this research as a theoretical criterion, next to the organizational readiness criteria. This reason behind this were researchers suggesting identification of employees' attitudes toward use of technology should also be taken into account in the process of developing an e-learning assessment (Aydin & Tasci, 2005). Steps were offered to reduce technophobia resulting from the e-learning implementation. Added value of the technophobia reducing steps is that these steps also should dispel truck drivers' negative experiences with computers and inexperience with computers when executed correctly. Heisterkamp's human resource department should take this suggested recommendation under control, as they regulate the (driving) staff. Low priority was given to the recommendation because this research assumes the truck drivers *could* possess levels of technophobia and computer inexperience after implementation of an e-learning system. In reality this might not be the case, which directly implies Heisterkamp should implement these suggested steps if signals of technophobia and computer inexperience are picked up after implementation. However, this research' mode of thought is reducing any potential threat of technophobia and computer inexperience to a minimum, conclusively these steps are suggested to be implemented in any case, emphasizing that final judgement is of course given to the management of Heisterkamp in this case.

INCREASE INVESTMENT COMMITMENT

Priority: High

The question concerning Heisterkamp's economic readiness depended on whether the management was willing to accept that the e-learning initiative will take a relatively large amount of time (nine months) of the IT department, with the current capacity, and to lesser extend the human resource department and the ('champion') group managing the change. The preliminary interviews showed the devotion of capital does have its limit according to the management, and that the expected costs serve as a potential deal-breaker. The capacity-issue of the IT department will prove to be an example of Heisterkamp's investment commitment, as capacity isn't necessarily lacking to realize actual completion, however capacity is lacking regarding meeting the potential realization time (in hours of labour). Not increasing investment commitment will translate to accepting the nine months completion time, *or* completely relinquishing the e-learning initiative. Increasing investment commitment will translate to increasing capacity by hiring 240 hours of labour. Heisterkamp's management will have to decide what to do with this information, before initiating e-learning implementation. A high priority is given accordingly.

DEVELOP/CREATE DESIRED E-LEARNING CONTENT

Priority: High

There is certainly enough potential e-learning content that Heisterkamp can use for its e-learning initiative, according to the readiness of content analysis. However, most of the educational content will have to be transferred into online material and online courses, before it can be put to use for Heisterkamp's e-learning initiative. Without e-learning content, having a working system is almost useless, which is why the development of e-learning content receives high priority. Heisterkamp's human resource department should take this suggested recommendation under their control, as they manage the educational process and content.

CREATE EDUCATIONAL CONTENT ANALYSIS PLAN

Priority: High

Tracking organizational training and employee development's effect on the external environment Heisterkamp wanted to change (improve), seems to be neglected by Heisterkamp. The absence of educational content analysis makes it impossible to determine whether the other aspects such as design and implementation are executed correctly, and thus adding analysis of educational content and its effects would very much improve Heisterkamp's educational readiness. This recommendation receives high priority as it would give Heisterkamp insight in whether resources spend in training and development actually pays off, and more importantly which facets of training pay off, or do not for that matter. The e-learning initiative would be an excellent starting point to start tracking the effect of organizational training and development. Heisterkamp's human resource department should take this suggested recommendation under their control, as they manage the educational process and content. They should get input, i.e. damage caused per driver, fines, etc. from other departments such as Heisterkamp's damage department.

ADJUST (EASTERN-EUROPEAN) EMPLOYEE CONTRACTS

Priority: Low

Opportunities arise for Heisterkamp due to legal constructions; According to an Heisterkamp expert on the field of Eastern-Europe employee (driver) contracts, all of the contracted chauffeurs are paid a monthly fixed salary, in which they are in service of Heisterkamp. This means the chauffeurs get paid whether they are on the road, on the premises, or even at home. The suggested combination of

making the chauffeurs use the eventual e-learning program on the premises, as well as at home, can therefore be made contractually mandatory for all of the Eastern-European truck drivers, without stumbling on any legal obstacles. Heisterkamp's quality, risk & legal manager should look into the contracts and adjust them accordingly. This recommendation receives low priority as it is the last step that needs to be taken before actual e-learning use.

CONDUCT RESEARCH INTO CONTRACTUAL OPPORTUNITIES AND LIMITATIONS

Priority: High

While contractual opportunities exist, obstacles might rise regarding making the use of e-learning mandatory for the Dutch and German truck drivers. Financial compensation seems to be inevitable regarding e-learning use for Dutch and German drivers as of now, however Heisterkamp's legal, risk & quality manager expects financial compensation can be avoided while still making use of the e-learning program mandatory for the Dutch and German truck drivers, which is why more research into legalities are required and suggested before commencing organizational e-learning at Heisterkamp. This is also the reason this recommendation receives high priority. Heisterkamp's quality, risk & legal manager is also suggested to guide and execute the research into legalities.

DEVELOP COMMUNICATION AND ENCOURAGEMENT PLAN

Priority: High

The leadership readiness analysis showed more support should be given by the senior management to convert negative attitudes into positive ones, before commencing an e-learning initiative. A communication plan is needed towards acceptance of e-learning, and learning in general, as a natural part of its everyday work (Rosenberg, E-learning: Strategies for delivering knowledge in the digital age, 2000), and which is why this recommendation receives high priority. The earlier mentioned steps against technophobia and the Technology Acceptance Model (TAM) are suggested to be used with the development of these plans, and should ideally be carried out by the collective 'champion' group. The plans should cover all intended end-users, including specific groups that might be, and are expected for that matter, to be somewhat resistant to the e-learning initiative such as relatively older employees.

DEVELOP CHANGE MANAGEMENT PLAN

Priority: High

The human resource readiness analysis showed the presence of Carnell & Shank's (2003) and Koska's (1992) 'champion' could not be detected in one single person working at Heisterkamp, regarding e-learning and its implementation. Also, Heisterkamp does not use a change manager or innovation manager. Therefore assigning a specially formed project group, with all of the necessary aspects of a theoretical 'champion' was suggested. In this sense, the lack of a 'champion' in the form of one person can be covered by a 'champion' in the form of a project group containing knowledge, skill, responsibility and authority to lead Heisterkamp towards adaption of the potential e-learning initiative. The judgement regarding the group's setup is of course given to the management of Heisterkamp, however suggested is that it follows and reflects the theoretical criteria in this research, i.e. technological, economic, human resource, etc. In practice this implies the group should at least have an IT expert, human resource expert, financial expert, legal expert, and a executive officer. A high priority is given to this recommendation, as this group is suggested to lead the e-learning initiative and the related changes/recommendations.

CREATE AND IMPLEMENT E-LEARNING SYSTEM

Priority: low

After all of the previous suggested recommendations have been implemented, the e-learning system can be implemented. However, such a system has to be created first of course. The analysis of the organizational topic of 'lack of capacity', showed the capacity of the IT department does not prohibit e-learning system creation, however it does extend creation time. The judgement regarding beginning creating the system is given to the management of Heisterkamp, after all its and investment issue instead of an e-learning issue. However actual implementation is suggested to be done after all of the other recommendations have been implemented, thus increased organizational readiness has been realised. Conclusively, low priority on e-learning system creation and implementation has been given. Heisterkamp's IT department should gain responsibility regarding e-learning creation, while the earlier suggested 'champion' group should take op responsibility and receive authority regarding e-learning implementation.

CONCLUSION

The aim of this research was to develop guidelines for e-learning implementation, in commission of Heisterkamp. Central questions were developed to retrieve these guidelines, which will be answered, and reflected on, below.

Central research question 1: What are the criteria for assessing organizational readiness to introduce e-learning?

Several theoretical models with common elements have been proposed throughout the years to assess the degree of e-learning readiness, however none of the models included all of the readiness criteria. Even more, no analogy and sometimes correlation among the factors suggested by the various models could be found.

Psycharis (2005) attempted to correlate the factors of e-learning readiness, and classified them into 3 major categories, which is why Psycharis' organizational readiness to e-learning model has been used as a starting point in this research:

Resources: includes the *technological readiness*, which investigates the access to the internet or/and the intranet provided, the available technological systems and the way they are used as far as e-learning is concerned, the *economic readiness*, which examines the willingness of the organization to invest in e-learning and the *readiness of the human resources*, examining the knowledge and the skills possessed by the ones involved in e-learning (Psycharis, 2005).

Education: includes the *readiness of content*, which examines the availability of the educational content, its form, its characteristics, the degree of its reuse and its adequacy for the enhancement of personalized teaching; it also includes the *educational readiness*, which examines the ability of an organization to organize, analyze, design, implement and evaluate an educational program (Psycharis, 2005).

Environment: includes the *entrepreneurial readiness*, which examines the structure and the practices of the organization that affect e-learning, the *readiness of culture*, which examines the organization's as well as the staff's behavior and attitudes in relation to e-learning, and the *leadership's readiness* which examines the support provided by the administration (Psycharis, 2005).

Central research question 2: What is the organizational readiness to introduce e-learning at Heisterkamp, studied in view of the assessment criteria ?

The previously mentioned criteria were used to conduct an organizational readiness analysis of Heisterkamp. The results of the analysis showed Heisterkamp's

technological readiness and human resource readiness appeared to be very good. Heisterkamp's readiness of (educational) content, educational readiness, readiness of culture, entrepreneurial readiness, leadership's readiness and economic readiness lack on certain (indicated) areas and leave room for improvement, resulting in ten prioritized recommendations.

Central research question 3: What are criteria for successful e-learning creation and implementation, not covered by organizational readiness to e-learning theory?

The trigger for this research was a practical one, as Heisterkamp needed information about e-learning and its implementation, regarding their own organizational situation. Contextual concerns were expressed, i.e. assumed collectively applicable only to Heisterkamp. This contextual foundation required additional theories outside, (and added to), Psycharis (2005) organizational readiness criteria to reflect and deal with all of the (prioritized) organizational topics.

The 'technophobia' criteria was added following research of Aydin & Tasci (2005), who suggested technology should also be taken into account in the process of developing an e-learning assessment. Carnell & Shank (2003), and Koska (1992), suggested the existence of a 'champion', in other words someone who has the knowledge, skills, responsibility and authority to lead the organization toward adaptations of an innovation, is positively related to adoption of an innovation. The 'champion' criteria was added to this research accordingly. Also, this research uses Hofstede's cultural dimensions (1980) and Nielsen's usability attributes (1993), as these theories could provide Heisterkamp's human resource educators with information that could assist them in understanding the cultural implications of using e-learning systems in various cultural settings (Downey, Wentling, Wentling, & Wadsworth, 2005). Finally, following research of Chen (2008), the Technology Acceptance Model (TAM) (Davis, Bagozzi, & Warshaw, 1989) was suggested to be used with the creation of communication and encouragement plans towards e-learning, to help deal with potential sources of end-user resistance.

Central research question 4: What are the necessary steps to implement e-learning at Heisterkamp, studied in view of the criteria for successful e-learning creation & implementation, and Heisterkamp's organizational readiness for e-learning?

In the end, ten prioritized and function-wise (if applicable) recommendations were presented in order to increase Heisterkamp's organizational readiness for e-learning, and deal with the expected problems regarding organizational e-learning. Heisterkamp was suggested to:

- Prepare/install computer labs
- Increase investment commitment
- Implement steps against technophobia and technological inexperience
- Develop/create desired e-learning content
- Create educational content analysis plan
- Adjust (eastern-European) employee contracts
- Conduct research into contractual opportunities and limitations
- Develop communication and encouragement plans
- Develop change management plan
- Create and implement e-learning system

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