



Master Thesis Management Information for corporate Learning and Development

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Management Information for corporate Learning and Development

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Summary

The corporate learning and development [L&D] environment is currently changing and managers involved in corporate L&D are more and more requesting insight in the contribution of learning towards their business and feedback on how well the department is performing. To meet these business needs the objective of this study was to generate the requirements for a management information system in relation to corporate learning. Specific attention has been paid to the determination of the desired information elements (i.e. measures and metrics) to be constructed and communicated by such a system. The results of this research should help KLM Business Campus [KBC] and other corporate L&D departments with the (further) development of their management information system.

In its research request KBC asked for a practical research, which should answer managerial questions like: How can the performance/ productivity of a training and development department be measured? How can the added value of a training and development be measured? and On the basis of which Key Performance Indicators [KPIs] could/should the department be managed? These questions formed the start of a preliminary literature review, aimed to understand KBC's request as a general business need. The findings of this review were used to construct a conceptual framework. The review revealed that both theory and practice lack a commonly accepted set of management information elements to monitor and manage corporate L&D activities. The identified lacks resulted in the formulation of the following main research question: Which information elements evaluate the value of corporate learning and development activities? Three sub-questions were formulated in order to provide an answer to this main question: 1) What is management information and how can information elements be determined?, 2) How does a corporate learning and development department operate and what information elements can be derived from the operation? and 3) What management information elements are currently used in theory and practice to manage corporate L&D departments and evaluate their value?

Literature was used to formulate definitions associated with management information, to get an understanding of what management information systems are, and to describe how managers involved in corporate L&D can use management information. To determine information elements both a top-down and a bottom-up approach have been used. By the means of a case description, complemented with literature findings, this research was able to describe the environment of corporate L&D and its operations using the ten elements of the systems perspective. This description helps to understand the people, organizations and technologies involved in corporate L&D, which is required to develop a feasible, viable and desired set of management information elements. To find out which management information elements are currently used in practice, six Dutch corporate L&D departments have been interviewed and their management information has been analyzed. This cross-case analysis found that L&D departments do have several information elements in common. The results also show that, based on their use of data and information in L&D, departments can find themselves at different stages of a so called maturity model. The top-down approach determined appropriate measures and metrics based on the strategy, vision, objectives and critical processes of KBC and its environment (formed by Air France-KLM its commercial division). The Balanced Score Card was used as a tool to derive these information elements. The top-down approach resulted in a number of initially required and desired information elements for three layers of management involved in L&D.

To answer for the main research question can be said that the value brought by corporate L&D activities is a complex construct, which cannot be expressed in a single quantitative measure or metric. A combination of subjective and objective, and quantitative and qualitative measures is required to steer and manage the business, to express the alignment of L&D activities with the learning needs of the organization, and to communicate the effectiveness and efficiency of the L&D department operations to L&D investors.

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Preface

This report is the result of six months of research conducted at KLM Business Campus. The report is written in partial fulfilment of the requirements for the degree of master of science in Management of Technology [MoT], studied at the TU Delft. Where the master aims to bridge the gap between technology and business, this thesis strives to contribute to the daily practice of corporate learning departments by providing insight in how management information (systems) can help them in their role as strategic business partner.

Without the help various people it would have been impossible to conduct this research and to write the thesis as it is presented to you.

I would first of all like to thank the general manager of KBC for proving me the assignment and for the support during the internship. I hope that this thesis marks a fruitful step in obtaining the desired situation. Then I would like to thank my supervisors from the TU Delft for all their support and answers, for providing me the feedback when needed and for keeping the research scientific relevant and valid by preventing me from being too practical. Thirdly, I would like to thank all the company representatives interviewed for being so open and collaborative in sharing your knowledge. For me it proved that those involved in the corporate L&D really want to make others better. Your collaboration serves as a strong example of the general L&D claim: "we can learn from each other".

For me corporate L&D was a whole new environment and therefore I would like to thank all my colleagues at KBC for their support in letting me explore their daily work; either in the form of proving me useful information and tools, or by just having fun talks during lunch.

Special thanks go to Remy, who is not only a fellow intern at KLM, but also a fellow student from my master and a great sparring partner during the research. Thanks for your support and I am convinced that your research can be of great value for the organization! I would also like to thank Wessel for his helpful feedback and comments.

Last, but certainly not least, I would like to thank my parents and girlfriend for their daily support. The last few months have been quite busy and various things happened simultaneously. It is good to know that I can always count on you!

I hope that you all enjoy reading this thesis and that you will find it inspiring and useful for your organization, research, or just your own interest.

Steven Paul Balk, B.Eng.

1 Introducing the research

Most large organizations have a corporate Learning and Development [L&D] department to support Human Resource Development [HRD]. The traditional role of these L&D departments is to support the organization by the development and delivery of training. This traditional role is currently changing into a modern role in most organizations, in which L&D departments are more and more seen as (performance) consultants. In the consultative role L&D should be aligned with the wider organizational environment (Ott, 2007). One of the consequences of this role change is that managers involved in corporate L&D desire management information to support their managerial practices.

This chapter will introduce the research into management information for corporate L&D as conducted at the KLM Business Campus [KBC]. KBC is one of the corporate L&D departments within the airline Air France-KLM [AFKL]. AFKL originated in 2004 when the Dutch airline KLM and the French airline Air France merged. The conceptual part of the introduction starts with the research background describing the organizational context of KBC and their specific research request (1.1). Thereafter KBC's request is identified by means of a preliminary literature review and conceptual framework as a general business need for corporate L&D management information (1.2). The review reveals that theory lacks consensus about which information elements to include in corporate L&D management information. To bridge this gap the objective of this research is to generate the requirements for a management information system in relation to corporate learning and development, with specific attention to the desired information elements (1.3). In order to achieve the objective one main and three sub research questions are formulated. The answers to these questions should lead to the achievement of the objective (1.4). The technical part of this introductory chapter presents the research strategy and related methods used to conduct the research, find answers to the questions, and obtain its objective (1.5). The final section of this chapter provides an overview of the upcoming chapters and what will be discussed in them (1.6).

1.1 An introduction to KLM Business Campus

To get a better understanding for the corporate L&D environment, from which the KBC's research request into management information originates, this section presents the main aspects related to the organizational context of KBC. KBC is the corporate L&D department for the commercial division of AFKL. Like many other organizations, the commercial division positioned its corporate L&D department under Human Resources [HR] (1.1.1). The primary task of KBC is to develop and provide L&D products e.g. training for the employees working in international sales organization, the commercial division, of AFKL. Therefore the learning consultants focus on identifying and analysing the learning needs of individuals and teams. When appropriate those needs are turned, with the help of product developers, into so-called learning solutions. Some of these learning solutions are traditional classroom training, which can be facilitated by KBC's trainers (1.1.1). KBC is one of the various corporate L&D departments within AFKL, since each division has its own representatives for L&D (1.1.3). In KBC's research request the department formulated its desire for a management information system to support the managerial and operational practices around corporate L&D (1.1.4).

1.1.1 Organizational structure of Air France-KLM and the position of KBC

The traditional way to depict organizations and their departments is by using an organogram. An organogram shows the hierarchical levels within an organization, indicating who are in charge and responsible for the different departments (Figure 1). AFKL consists of multiple divisions and departments. The Commercial Division is generally responsible for the international sales of AFKL. The division is led by two Executive Vice Presidents [EVPs], one for commercial sales and alliances and one for the commercial strategy. These two EVPs are both in charge of two Human Resources managers, one for Air France and one for KLM. KBC positioned under KLM's Human Resource is manager. The department is focused on analysing the learning needs of individuals and teams, within the international sales organization and the department is offering appropriate learning solutions for the various employees within the commercial division (KLM Business Campus, 2014). KBC's hierarchical position as presented in Figure 1 shows, from top to bottom, the three groups for which management information is initially desired: the Commercial EVPs, the manager KLM Human Resources and the General Manager of KBC.



Figure 1 Organogram position KLM Business Campus, derived from: (Air France-KLM, 2015) & (Air France-KLM, 2012)

1.1.2 Organizational structure and roles within KBC

KBC has its own organogram to depict the hierarchical structure and relations within the department (Figure 2). The HR Manager, Controller, Training Coordination Centre, Communications & corporate social media and interns all have supporting functions. The general manager, consultants, program developers and trainers perform those roles which are most closely related to corporate L&D.



Figure 2 Organogram of KLM Business Campus, source: (KLM Business Campus, 2015)

Table 1 presents the roles, tasks and responsibilities of the employees at KBC as obtained during the research period. The department operates in a project-based fashion

which implies that the number of people needed per role can differ over time and per project.

Table 1	Roles.	number of	employees	and	their main	tasks and	responsibil	lities at	КВС
Tubic 1	Rucs,	number of	cinployees	and	unch mann	tusks und	responsion	ities at	NDC

Role	# employees	Main tasks and responsibilities
General Manager	1	 Point of contact and responsible for the performance of other roles Contact for commercial HR manager and EVP commercial Contact with other internal and external corporate L&D counterparts Budget management Strategy and vision of KBC
Financial Controller	1	 Control the budget of the department Handle, approve and administrate expenditures/financial transactions
HR manager	1	 Employee support (not seen/spoken during observation)
Training Coordination Centre	2 + 2 temp.	 Support for/of the other roles Learning management system Facility management (classrooms, locations) Contact centre for customers/third parties
Communications	1	 Controlling the corporate social media page Communication of available learning content towards customers (various media) Organization of L&D events
Interns	Varies	 Support the organization practically and with research
Learning and Training Consultants	7 +2 temp.	 Identify and analyse learning needs and translate them to solutions Provide the customer an appropriate learning solution or advice Purchase training solutions at third parties Training Evaluation Customer aftercare / follow-up Learning budget administration/account management for the various international regions (pot-concept) Facilitation/Providing L&D products Design and develop L&D products Some are first point for local HR manager about L&D
Product developers	2 + 2 temp.	 Design and test new learning tools Design new learning content Innovate corporate L&D at KLM
Manager trainers	1	 Point of contact for trainers and general manager Responsible for the performance of the trainers
Trainers	4	 Give training (deliver content) Make training content Administrative tasks for own training

1.1.3 Comparable departments and counterparts of KBC

KBC is not the only department involved in corporate L&D within AFKL. After the merger both airlines kept most of their own divisions. These divisions often have their own L&D departments or representative. For KLM nine divisions have their own L&D representative/department, which are presented in Table 2. Each of these L&D departments provides L&D products and services for its specific group of employees working in that division. This construction of multiple departments and representatives has grown into its current state since the learning needs of the various employees within the airlines differ. A flight attendant has other learning needs and requires other training than a sales representative. Alongside the divisional L&D representatives/departments, there is the KLM Academy. This specific L&D department operates on KLM corporate level and develops and provides its L&D products for all managers from a certain level.

Cargo	Operations: Flight Ops, Fleet Services, OCC	Inflight Services				
Chief Information Officer /Information systems/IT	Commercial, Marketing, Network, Revenue Management	Engineering and maintenance				
Ground Services	Corporate: HR, Finance, Procurement, Security	KLM cityhopper				

Table 2 Divisions within KLM that have their own L&D representatives/department

In the Commercial Division, the division in which KBC resides, multiple schools and L&D departments can be found (Figure 3). After the merger between KLM and Air France multiple schools continued to exist. On the Air France side there are Le Campus, Ecole des Vente and Ecoles des Escales. These three departments, like KBC, operate for the commercial division. Each of these departments has its main tasks and target group of employees and its own expertise in certain learning product segments (Figure 3). Since the various departments are all involved in L&D there is collaboration between the employees of KBC and their French counterparts.

Services



Figure 3 Organizational structure of L&D in the Air France KLM Commercial Division, source: (KLM Business Campus, 2014)

 Table 3 L&D Departments and schools in the commercial division of Air France-KLM, derived from internal presentations

L&D department/school	Main tasks/scope	Main product segments
KLM Business Campus	Develop, design and provide L&D products for the (KLM part of the) commercial division	Design and deliver tailor made L&D products and services, talent programs, vitality, networking, personal development, sales support, Care (emergency response team), Insights (team development) and L&D innovation (development of e- learning products/apps/instructional video's).
KLM Academy	Provide interventions and training for managers and specialists from a certain management level KLM- wide	Learning products for Management, leadership and personal effectiveness.
Le Campus	French counterpart of KLM Academy.	Leadership/Management, Languages, and Transversal skills. Also provides joint programs with KLM Academy
I'Ecole des Ventes (sales school)	French counterpart of KLM Business Campus. Develop, design and provide L&D products for the (Air France part of the) commercial division.	Direct Sales, Corporate & Distribution and Customer Care. Classroom, Teletrainings and E-Learnings. Also provides joint programs with KLM Business Campus
l'Ecole des Escales (stopover school)	Air France's training centre for the various functions of ground operations	Ground operations and Safety at work: Operational management, Customer Service, Airside operations, Health and Safety at work and dangers goods.

The way of operation within the various L&D departments in AFKL differs per department, even within the commercial division. The differences in operation reveal themselves for instance in the way that training data is collected or how training is evaluated. However, the different departments currently adapt their technologies and procedures in order to create synergy. Two examples are the new corporate wide Learning Management System [LMS] and a commonly desired evaluation system and method to evaluate training.

1.1.4 KBC's research request for management information

The three previous paragraphs discussed the main aspects of KBC's organizational context in order to illustrate where the research request originates. In their initial request for research KBC seeks answers to the following managerial questions raised by the general manager of KBC, the KLM Human resources manager and the Commercial EVPs:

- How many and which employees have we trained?
- How much have we spent on L&D?
- How can the performance/ productivity of our department be measured?
- How can the added value of this corporate L&D department be evaluated?
- On the basis of which Key Performance Indicators [KPIs] could/should the department be managed?

In many organizations management information [MI] and management information systems support managerial practices. For this support the systems provide the information required to formulate answers to the practical questions like: "*How many and which employees have we trained?*" and "*How much have we spent on L&D?*" However, for the less practical questions such as "*On the basis of which Key Performance Indicators [KPIs] could/should the department be managed?*" and "*How can the added value of this corporate L&D department be evaluated?*" the field of corporate L&D seems to lack direct answers. This lack leads to KBC's initial research request summarized in the following three points:

- Drafting and determining (key) performance indicators.
- Determining the required data, information and (IT) systems needed to report these performance indicators.
- (re) Structuring the internal administrative processes, this could include the training of employees to work with the (new) system(s).

In this research request KBC expresses its current need for a management information system. The development of such a system requires an identification of information elements like (key) performance indicators and other measures and metrics. The upcoming section generalizes KBC's research request as a general business need in order to formulate a relevant research objective and accompanying research questions.

1.2 Understanding the research request as a general business need

In the research request KBC expresses its need for a management information system. KBC's need for an information system does not stand on its own. Due to improved technologies almost all organizations implement information systems in order to improve their effectiveness and efficiency. This business need for information systems originates from various environments such as corporate L&D in this case. These environments composed of people, are organizations and their existing or planned technologies (Figure 4). (Hevner, March, Park, & Ram, 2004) Without a general understanding of the origin and nature of the business needs for a corporate L&D management information system, it is hard to develop such an artefact that is desired by the people, viable for the organization and feasible by technology.





In order to better understand KBC's specific March, Park, & Ram, 2004) research request in the corporate L&D environmental context, a preliminary literature review has been conducted (1.2.1). The main goals of this review are to understand KBC's specific research request for management information as a general business need and to present the current state of literature on this specific topic. Thereby the review shows the relevance of KBC's specific research request with respect to other corporate L&D departments. The review also reveals the current gaps in literature (1.2.2). From the findings of the preliminary review a conceptual framework is constructed, which depicts the concepts underlying the expressed need for corporate L&D management information (1.2.3). This framework provides insight in the general business need for L&D management information (1.2.4). With the literature findings and conceptual framework it is possible to formulate a relevant research objective in the next section.

1.2.1 A preliminary literature review into corporate L&D management information

To conduct the preliminary review relevant articles and other literature needed to be found and qualified. The steps towards the literature findings are presented in the upcoming sub-paragraphs.

Identifying core concepts

The first step in the review is to identify core concepts related to the research topic which can serve as search terms. The core concepts are underlined in the upcoming phrases summarizing the research request. KBC as a <u>training</u> department wants to develop <u>management information</u> in relation to corporate <u>learning</u> and <u>development</u>. This information can be used by the various managers and employees related to L&D in order to <u>evaluate</u> the <u>performance</u> and enhance decision making.

Constructing search-terms

The next step in the review is to construct initial search terms my making combinations of the various concepts. These combinations lead to various search-terms like: *training evaluation, management information systems, performance measurement in L&D* and *organizational performance measurement*.

Selecting and qualifying literature

In order to select and qualify literature that is found by the search-term various criteria are used. The first criterion is the relevancy of the literature as presented by the search engines. Relevancy in these engines means that the search terms and thus the concepts are incorporated in the text. Another criterion for relevancy is the publication date, as the latest literature is better to find relevant research possibilities. The number of citations is used as a criterion for the quality of literature. The number of citations provides an indication of the acceptance and thus quality and usefulness of the literature. Of those articles that were deemed relevant by the search engine and had a high number of citations, the summaries were read and the articles were scanned whether they included and explained the core concepts, if they tested hypotheses that showed relations between the concepts, what the results of the study were and if new concepts were introduced. The references within the literature were used to start the "snowball effect": The references of the found article are used to find more literature on the same topics or related concepts.

Searching in general search engines

The next step is to use the search-terms and combinations of the search-terms on general search engines like Google Scholar and Scopus. These engines are used to find literature related to corporate L&D and containing the underlined concepts presented earlier. These searches lead to relatively old and extensive books about the evaluation of training, written by Kirkpatrick and Phillips. These books are useful to understand the evaluation of training, but less suitable to identify the current state of science on the topic of management information for corporate L&D. The search for *organization performance measurement* leads to the article "*Measuring Organizational Performance: Towards Methodological Best Practice*" (Richard, Devinney, Yip, & Johnson, 2009). This article was selected for its high number of citations (367). The summary contains a call for research into the topic of performance measurement within specific organizational situations, which indicates a research opportunity for this thesis. By scanning the article multiple tables containing the most commonly used performance measures appear, probably useful to incorporate in the management information system.

Searching in specific journals

As said, the main findings of the general engines included relative old books. In order to finds more up to date literature, presenting the current state of science on the research topic, specific journals were used. Several search attempts with the same search-terms as used earlier are done in journals such as The International Journal of Training and

Development and the Journal of European Industrial Training. Also here the articles are qualified as described above based on relevancy, citations, references and explanation of concepts. The searches in training specific journals already lead to more L&D content related literature. The findings presented in the found literature are presented in the upcoming paragraph.

1.2.2 Findings of the preliminary literature review

After the search and selection of literature the following findings can be presented in order to understand the research context and KBC's research request as a general business need. The sub-paragraphs below present the main findings.

Employees need to learn and develop

Employees require and use their human capital, i.e. their knowledge, skills, habits, capabilities, attitudes, creativity and competences, to function and perform within their organization. Organizations on their part use the collective of human capital embodied in their employees to operate and perform in a competitive environment. Organizations can use their human capital as a strategic asset in order to obtain a competitive advantage. By the means of providing and supporting learning and development, organizations can invest in their human capital. (Wheelock & Oughton, 2011)

Learning requires investment

Provision of, and support for, L&D products and services, e.g. classroom training, elearning, knowledge sharing platforms and learning consultancy, form the most tangible category of human capital investments. In many organizations these products and services are internally designed, developed and delivered by a so called corporate L&D department. The choice for internal L&D development and delivery is often made to assure that the products and services are better in fitting the company specific requirements. In its L&D products companies can for instance express the desired behaviour of their employees towards their customers or let them acquire skills that are needed for a specific function.

Learning and development can lead to higher performance

The investments made in human capital should ultimately lead to an improved organizational performance (Grossman & Salas, 2011). By this improved performance high quality L&D within an organization can ensure a strategic advantage. Besides the strategic advantage and organizational performance arguments various researchers argue that providing high-quality L&D products is related to concepts such as organizational success, successful job performance, attracting and retaining qualified employees and keeping up with all kinds of (technological) developments (Grohmann & Kauffeld, 2013).

Investors in L&D require (performance) feedback

The investments required in corporate L&D are for most companies quite substantive (Grohmann & Kauffeld, Evaluating training programs:development and correlates of the Questionnaire for Professional Training Evaluation, 2013). During times of financial recession many organizations will look into their L&D department and try to find out whether cost can be cut. During the cost-cutting exercise many investors demand (performance) feedback from their L&D department. What the investors basically ask of their L&D department is to justify its resource expenditures.

At companies where multiple L&D departments co-exist another incentive arises for investors to demand feedback from their L&D department. This is because once multiple L&D departments more or less have the same function within the organization, situations can occur in which certain L&D activities are performed double and/or in different ways. Double performed tasks can lead to higher cost and therefore the investors want to know which L&D products and services are provided by the various departments and where these departments differ from each other. In the case of comparable departments

investors are also keen to assess the differences in performance between the departments.

A third incentive to demand feedback from the L&D departments is caused by the possibility to outsource corporate L&D activities. Many large organizations design and develop their own L&D products. However, various specialised firms offer the possibility to buy and/or co-create L&D products and services. The potential cost reductions of outsourcing form another trigger for investors to demand insights in what their L&D department contributes to (the performance of) the organization, given the resources required by L&D department. (Grohmann & Kauffeld, 2013)

Feedback requires information like metrics and measures

Since investors increasingly judge L&D departments on their contribution to the organizational performance, the demand for appropriate feedback measures and management information systems for corporate L&D rises. L&D departments can use a management information system in order to construct the measures, metrics and other information to incorporate in the desired feedback. If composed of the right information elements, management information can be used to evaluate the performance of an L&D department and the contribution of L&D towards the organizational performance.

Measuring organizational performance

The desire to evaluate and measure the influence of L&D on the organizational performance requires the use of organizational performance measures. These performance measures can be used by managers to evaluate specific actions and create a benchmark to see where the organization stands vis-à-vis its rivals. By measurement one can also asses how the performance evolves over time. Richard, Devinney, Yip, & Johnson, (2009) have researched how organizational performance is measured in practice. First they defined that organizational performance encompasses three specific areas of firm outcomes: financial performance, product market performance and shareholder return (Richard, Devinney, Yip, & Johnson, 2009, p.722). Their research shows that a large set of commonly used organizational performance measures exists to measure these three areas. It depends per organization, department and even per level within the department which management information is appropriate and useful. The existence of this large amount of found measures and metrics is due to the multidimensional conceptualization of organizational performance in practice. Multidimensional conceptualization means that the definition of performance can vary between organizations as the measures for performance are a construct of the various aspects that define it. The authors conclude the following about the measurement of organizational performance:

"All management research that claims to address organizational performance, should explicitly address the following two requirements:

a) Possess a strong theoretical rationale on the nature of performance (i.e., theory establishing which measures are appropriate to the research context) and

b) Rely on strong theory as to the nature of measures (i.e., theory establishing which measures should be combined and the method for doing so)" (Richard, Devinney, Yip, & Johnson, 2009) (p.718)

Thus, according to the authors whenever performance measures are going to be used in corporate L&D management information, each measure will have to cover these two requirements in order to be selected as appropriate information element.

The challenge to determine appropriate measures and metrics

As mentioned earlier, there is an enormous amount of possible performance indicators, measures and metrics to choose from, or to establish, that could be included in corporate L&D management information. The upcoming example illustrates that determining

appropriate performance measures to tap organizational performance is not always a straightforward exercise, due to the multidimensional conceptualization of performance.

In some cases the determination of appropriate measures to assess performance seems relative straightforward. In the case of a standard production line, like within a tyre factory, performance could be measured by a relative simple set of measures, e.g. production cost per tyre, production time per tyre, on time delivery, and tyre quality. If the production unit can lower its cost, or production time per tyre, while it maintains its quality standard, it can be said to have enhanced its performance, that is its efficiency and/or effectiveness. The straightforwardness of finding the appropriate measures for performance is however not always clear once the scope is widened to organizational performance. A production unit can produce tyres at the lowest possible cost, but if the marketing department cannot make the appropriate promotion to sell enough tyres to cover the production cost, the organization as a whole is not performing well. However, the measurement of having good promotion is much more complex than the measurement of unit production cost.

The determination of appropriate performance measures and metrics for an L&D department is even harder than for a tyre factory production unit. Where the tyre production unit performs a core business activity, an L&D department has a so called supportive function within the organization. A supportive function means that the department is not directly involved in the core business of the organization, making it hard to determine performance measures. To illustrate: If the tyre production unit has a lower performance, e.g. the tyres are no longer meeting quality standards, the whole factory is likely to lose customers and thus see a reduction in revenue. Thus, tire quality and total revenue can be seen as important performance measures. A low performance of the supportive function as performed KBC is not likely to have a direct measureable impact, neither on the core business of the commercial division (selling tickets) nor on the core business of AFKL (transportation). It would therefore not make sense to assess the performance of KBC on the number of sold tickets or on the revenue per passenger kilometre, as long as the causality between KBC's performance and the contribution to the metrics cannot be demonstrated. However, the fact that the contribution and impact to the core business of a supportive department are often vague or indirect provides no argument to not measure the performance of an L&D department. Supportive departments like L&D can be assessed on their efficiency, effectiveness and alignment with the business (Bersin, 2007).

Sole use of objective measures quantitative measures will most likely not grasp the total construct of L&D performance. Therefore if the performance of an L&D department should be expressed in measures and metrics, as desired in the research request, subjective quality aspects should be considered to be incorporated. A trainer for instance should not be solely judged on the amount of people he trained over the last month. Other subjective and qualitative aspects, like whether the learners liked his way of teaching and how well he knows the training content, also play a role in his performance and his contribution to L&D and thus the organization.

Other aspects in determining measures and metrics

The multidimensional conceptualization of performance implies that once corporate L&D management information is going to be developed and performance measures are going to be derived, one must always look at a variety of factors like the context of the communicated information, the content and type of information that should be communicated towards management, the way that information can be interpreted and used, and the relevancy of the information for the different stakeholders. These various factors are related to some dimensions of the organizational culture. For example whether the organization is data-driven or whether managers assess people only based on facts and figures.

Research topics in corporate learning and development

Various researched topics in the field of L&D and accompanying concepts are among others: the evaluation of training (Kirkpatrick, 1998), (Griffin, 2011), the contribution of learning to an organization (Bramley & Kitson, 1994), training transfer (Saks & Burke, 2012), the design and management of a learning centre (Malone, 1997), the impacts of training on an individual (Colquitt, LePine, & Noe, 2000) and the Return on Investment of training (Phillips, 1997), (Chochard & Davoine, 2011). The findings of these researches, and many others, including the methods used to quantify certain effects of training and learning can be useful in developing management information for corporate L&D.

Science needs practical research in management information for corporate L&D

In his article Griffin argues that "workplace learning evaluation is still an emerging field rather than a single settled discipline established within an accepted paradigm and associated methodology and methods" (Griffin, 2011, p. 847). Workplace learning is defined here as any planned event, experience or activity associated with the workplace that results in or seeks to achieve a change in employees' skills, knowledge and/or attitudes. He calls for research that helps to put training evaluation on a stronger theoretical basis. Richard, Devinney, Yip, & Johnson, (2009) conclude with a call for research that examines performance measurement using multiple measures, which also should appropriately align the research context, in this case corporate L&D, with the measurement of organizational performance. In the research discipline of information systems design science there is a call for research that aligns the discipline with realworld experiences (Hevner, March, Park, & Ram, 2004). The practical research, as performed at KBC and presented in this thesis, aims to contribute to these calls for research by supporting the development of a management information systems for corporate L&D by focusing on the determination of the appropriate information elements to be obtained and communicated by this system.

1.2.3 Conceptual framework derived from the preliminary literature review

The various findings of the literature as presented in the previous paragraph can be summarized in a conceptual framework aggregating the found concepts and their relations (Figure 5). In this conceptual framework two levels are hidden: the organizational level and the L&D department level.

The organizational level of the conceptual framework

On organizational level, managers and EVPs need to decide (arrow 1) whether, which and how much resources to invest in L&D departments (arrow 2) and how and on which aspects the employees within the organization should develop themselves (arrow 8). With the available resources the L&D department is enabled to develop or purchase L&D products (arrow 3) and deliver these to the employees within the organization (arrow 4). The idea of L&D products is that employees will learn and enhance their human capital ultimately leading into an increase the performance of their work (arrow 5). If somehow the L&D contributions to the organization can be evaluated and measured (arrow 6) and communicated in sound and relevant management information (arrows 7 & 11), managers can see what value L&D contributed to their employees and the organization. Well communicated management information about how L&D contributes towards the company will most likely result in better decision making in the assignment of corporate resources to the L&D department.

The L&D department level of the conceptual framework

On the other level of the conceptual framework there is the L&D department as a separate business entity, including its own employees, managers and performances. The managers of the L&D department often need to decide how to allocate the resources within their department (arrows 1 & 2) and how they manage these resources and the L&D operations (arrows 8 & 9). In addition, L&D managers need to coordinate the internal processes of the L&D department (arrows 3 & 4). If the department is properly

managed, its products will contribute to the organizational performance (arrow 10). In order to manage the L&D department, properly selected and communicated management information (arrow 11) helps to make decisions (arrow 7).



Figure 5 Conceptual framework based on literature findings

1.2.4 The general business need for corporate L&D management information

The goal of the literature review was to create an understanding for KBC's specific research request in the corporate L&D environmental context. The findings of the literature review leading to the conceptual framework suggest that corporate L&D needs management information in order enhance its operation. However, currently there exists no consensus in practice about the right management information and appropriate information elements to be incorporated. Theory shows by its calls for research that information elements should be determined based on the specific context in which they are going to be used. For corporate L&D in general, these findings in theory and practice mean that in order to assess the performance of L&D departments and evaluate the value of corporate learning, appropriate information elements will have to be determined.

1.3 Research objective

The research objective is derived from the research request of KBC and the general business and scientific needs as obtained by the preliminary literature review. The objective of the research is to generate the requirements for a management information system in relation to corporate learning, with a specific attention to the desired information elements.

1.4 Research questions

In order to achieve the research objective this research strives to provide an answer to the following main research question:

• Which information elements evaluate the value of corporate learning and development activities?

In order to provide an answer to the main question three sub-questions are formulated:

- What is management information and how can information elements be determined?
- How does a corporate learning and development department operate and what information elements can be derived from the operation?
- What management information elements are currently used in theory and practice to manage corporate L&D departments and evaluate their value?

The answers to the main- and sub-questions are provided step by step in the remainder of this thesis using the research strategy as described in the upcoming section.

1.5 Research strategy

This section of the introductory chapter describes the chosen strategy and methods to achieve the objective and provide answers to the research questions. Since this research is aimed support the development and design of management information system the research is placed into the field of design science in information systems. Hevner, March, Park, & Ram, (2004) wrote an article providing a conceptual framework and guidelines to understand, execute and evaluate design science research in information systems. The framework is used to understand the context of this research (1.5.1). The guidelines are used as a tool to conduct the research in a proper fashion (1.5.2). Together, the framework and guidelines help in framing the steps and determining the methodologies used to answer the research questions (1.5.3).

1.5.1 Design science in information systems research

Figure 6 presents a conceptual framework that helps to understand design science research in information systems. This field of science is rooted in both the behavioural and design science paradigm (Hevner, March, Park, & Ram, 2004). The framework to conduct research in these fields consists of three major blocks: Information systems research itself, the Environment and the Knowledge base. Each of these blocks is discussed in the upcoming sub-paragraphs.



Figure 6 Framework for design science research in information systems, source: (Hevner, March, Park, & Ram, 2004)

Information Systems Research

Information systems research is conducted in two complementary phases: development/building and justification/evaluation. The research presented in this thesis is mainly focused on the development phase and more specifically on the identification of the information elements to be incorporated in the management information system. Later at the end of the two phases the result should be a well-designed artefact in the form or a management information system. According to Brown (2008), one of the founding fathers of design thinking, a well-designed artefact is viable from a business perspective, desired from the people perspective and feasible from the technology perspective (Figure 7).



Figure 7 Confluence between people, business and technology, inspired on: (Brown, 2008)

What Brown (2008) for design science research defines as an innovative and workable solution, originates from the same confluence as the business needs for management information systems: namely the confluence of people business and technology. As a consequence it is required to get an understanding for the problem context, the environment, before one can start the development and design of a solution to the business need (Hevner, March, Park, & Ram, 2004).

Environment

The environment, which is composed of people, organizations, and technology, defines the problem space in which the phenomena of interest for this study reside. These three components define the business need or "problem" as perceived by the researcher and discussed earlier in this chapter. In order to let the future artefact (the management information system) fit the appropriate environment (corporate L&D) an understanding of how the environment operates is required. (Hevner, March, Park, & Ram, 2004). Understanding the environment already started by discussing the business need and will continue in chapter 3 by answering the sub-question "*How does a corporate learning and development department operate?*".

Knowledge base

Both theory and practice form *the knowledge base* which provides numerous foundations and methodologies to understand the problem, conduct design research and find a solution to the business need in the form of an information system. Rigor in design research is achieved by appropriately applying existing foundations and methodologies. Application of theory into practice allows design science researchers to contribute to the knowledge base. More on the methods that will be used to conduct this research can be found in paragraph 1.5.3.

1.5.2 Guidelines for conducting design science in information systems research

Hevner, March, Park, & Ram, (2004) formulate in their article seven guidelines to execute and evaluate design research. These guidelines, summarized in Table 4, are derived from the fundamental principle of design science that knowledge and understanding of the design problem and its solution are acquired in the building and application of an artefact. In order to conduct design research in a proper fashion, each of these guidelines should be addressed. Therefore each of the guidelines is shortly described in relation to this research into management information for corporate Learning and Development in the upcoming sub-paragraphs.

Guideline	Description
Guideline 1: Design as an Artefact	Design science research must produce a viable artefact in the form of a construct, a model, a method, or an instantiation.
Guideline 2: Problem Relevance	The objective of design-science research is to develop technology-based solutions to important and relevant business problems.
Guideline 3: Design Evaluation	The utility, quality, and efficacy of a design artefact must be rigorously demonstrated via well-executed evaluation methods.
Guideline 4: Research Contributions	Effective design science research must provide clear and verifiable contributions in the areas of the design artefact, design foundations, and/or design methodologies.
Guideline 5: Research Rigor	Design science research relies upon the application of rigorous methods in both the construction and evaluation of the design artefact.
Guideline 6: Design as a Search Process	The search for an effective artefact requires utilizing available means to reach desired ends while satisfying laws in the problem environment.
Guideline 7: Communication of Research	Design science research must be presented effectively both to technology-oriented as well as management-oriented audiences.

 Table 4 Design science Research guidelines, source: (Hevner, March, Park, & Ram, 2004)

Design as an artefact

Design-science research must produce a viable artefact in the form of a construct, a model, a method or an instantiation. All of these types of artefacts as outcomes of the research can be relevant for KBC and corporate L&D in general. However, the result of a design research in information systems is by definition an IT artefact, created to address the organizational problem. Such an artefact must be described effectively, enabling its implementation in the appropriate domain (Hevner, March, Park, & Ram, 2004). Due to

time constraints the objective of this research is not to fully develop an IT-artefact but has been limited to determining the information elements that need to be incorporated in such a system. In this way this research contributes to the development of an IT-system by deriving the information elements which become part of the design requirements for the future system.

Problem Relevance

In design science research relevance is assured by framing the research activities in such a way that they address the business needs. For this research it means that the findings should help in the development of a corporate L&D management information system. In the case of this research the problem originates from KBC's research request, which is to develop and implement a management information system for learning and development. Since most companies have an L&D department, and a commonly accepted set of information elements lacks in practice, the research is also relevant for a wider audience than KBC alone.

Design Evaluation

The artefact, which is the outcome of a design science research, must demonstrate its utility, quality and efficacy by using well-executed evaluation methods. Hevner, March, Park, & Ram (2004) define five types of evaluation methods: observational, analytical, experimental, testing and descriptive. In the case of an IT-artefact evaluation includes integration of the artefact within the technical infrastructure of the business environment. Translated to this research it would mean that (a part of) the management information for learning and development organizations or a prototype of it should be evaluated within the context of KBC.

Research Contributions

There are various areas where the research into management information for learning and development organizations will contribute. From a scientific perspective, by serving the calls of research mentioned in the preliminary literature review. From a practical perspective the research contributes to L&D departments by determining desired and viable information elements to be used in the desired artefact.

Research Rigor

The artefact, which is the outcome of the research, must be rigorously defined, formally represented, coherent and internally consistent. The research therefore relies on the application of rigorous methods in both the construction and evaluation of the design. For this purpose the research will rely on various foundations and methodologies like literature reviews, case studies, interviews, observation, and content analysis.

Design as a search process

Design can be seen as a search process in which various means (available actions and resources) are used to reach a desired end, a solution. This process is in most instances inherently iterative (Hevner, March, Park, & Ram, 2004). This research is basically set up around two parts. First there is the L&D department of KBC which is used as a case study example to describe how an L&D department operates. From this case it is possible to derive and determine appropriate information elements related to the context of corporate L&D. The other part is based on a cross-case study in which other L&D departments are assessed. Observation and interviews are therefore the two main methods in this research to arrive at the desired end; achievement of the research objective. Achievement of the objective can be seen as a step in the total development of an information system.

Research Communication

Design science research, and thus this final thesis, must be effectively presented to technology as well as a management oriented audiences. In this research the scientific community and the successors in the project are seen as the technical audience. The

technology-oriented audience requires sufficient detail to construct the described artefact and implement the desired information elements in the organizational context. For them it is also important to include the processes by which the elements are constructed and evaluated. The latter is also important for the repeatability of the research. The management-oriented audience needs sufficient detail to determine whether the organization should commit resources to the development and use of corporate L&D management information. For this purpose a prototype could show the importance of the problem and the novelty and effectiveness of the artefact. For this research the management-oriented audience is seen as the future users of the artefact; the manager of KBC and the higher level managers, since they can commit their resources to the development process and artefact. Also other managers in corporate L&D are viewed as a relevant audience.

1.5.3 Research steps and methodologies used in this research

The previous paragraph showed how this research relates to the seven guidelines for design science research. The upcoming sub-paragraphs will explain in more detail which steps are going to be taken in order to find answers to the research questions, and which methodologies are going to be used during the steps.

Understanding the artefact

Before this research can contribute to the development of a management information systems there needs to be an understanding for this artefact and related concepts. For this purpose the question "*What is management information and how can information elements be determined?*" will be answered. This question will be mainly answered by exploration of the available literature on the topic of management information and management information systems.

Understanding the environment

As mentioned earlier, purposeful artefacts can only be developed if there is an understanding of the environment for which they are developed. In this research KBC is used as a case study example to describe the operation of a corporate L&D department in. This means that KBC is seen as a single case example of a corporate L&D department, within the context of AFKL, in which multiple units of analysis reside, e.g. the various roles and processes. Yin (1994) would therefore see the way to obtain an understanding for the environment as a type 2 case study. In order to structure the description of the environment a systems perspective is taken which will be introduced in chapter 3. This step of the research should lead to a partial answer to the question "How does a corporate learning and development department operate and what information elements can be derived from the operation?".

Deriving management information elements using the management information of others

In order to find an answer to the question "*What management information elements are currently used in theory and practice to manage corporate L&D departments and evaluate their value?*" a cross-case analysis is conducted. By assessing the same phenomenon of management information for multiple cases, corporate L&D departments, a benchmark can be constructed of the information elements currently in use (Yin (1994) would see it as a type 3 design). In order to obtain the information elements semi-structured interviews with representatives of other corporate L&D departments are conducted.

Deriving management information elements from own operation

Where the previous step finds an answer to the commonly used information elements this steps will answer "(...) *what information elements can be derived from the operation?"*. The goal of this fourth step is to derive information elements that are better in fitting KBC's case than the information elements obtained by the previous step. For

this purpose a structured approach needs to be selected, which can only be done once there is clarity about how to determine management information elements.

Answering the main question, implications and reflection

The four steps should lead to the answers of the sub-questions. From these answers it should be possible to construct an answer to the main question. Thereafter can be evaluated whether the objective has been achieved, whether the best methods have been used, and what the various implications of the findings of this research are.

1.6 The remainder of this thesis

This chapter introduced the research and presented the research background, the objective, questions and the general research strategy. Now that the objectives and goals are clear the remainder of the thesis will continue with the steps required to provide an answer to the research questions and derive the information elements (Figure 8).

In order to gain an understanding about the artefact under development the next chapter discusses management information and management information systems based on literature findings (2). A well-designed artefact requires an understanding of the business environment in which it is going to be used. Therefore KBC is used as a case company to describe the environment and context of corporate learning and development. In order to make this chapter more generalizable the case department is discussed in connection with theory when appropriate (3). In order to find out whether other corporate L&D departments are facing the same business need for management information and how they satisfy this need, a cross-case analysis with six other corporate L&D departments is conducted (4). From the cross-case analysis several generally used information elements can be deducted. However, since management information is a very company specific artefact information elements have also been identified using a so-called top-down approach (5). Combination of all the steps leads to an answer to the main research question and the initially desired management information elements to incorporate in a management information system for corporate L&D (Fout! Verwijzingsbron niet evonden.). Once the desired information elements are known, specialists should build and construct the information system that aids managers and employees involved in corporate L&D in their decision making. However, various steps are to be taken before such an artefact becomes reality and future research and work is needed to assess the selected information elements (7).



Figure 8 Thesis chapters

2 Understanding management information and management information systems

Without an understanding of the artefact under development, management information and accompanying system, it would be hard to define the information elements, i.e. the appropriate measures and metrics. This chapter strives to answer the sub-question: What is management information and how can information elements be determined? In order to get an understanding of the artefact this chapter will first discuss the definitions related to management information and how information is obtained from observations (2.1). The information embedded in a set of management information can be used for a variety of purposes like performance improvement and managerial decision making (2.2). The various types of management information can be framed in different ways and on different levels. Key Performance Indicators form a special category of management information elements (2.3). Information elements can be derived or determined by the use of a bottom-up or top-down approach (2.4). Once management information is used within an organization the management needs to be careful in how it uses the information in daily practice (2.5). Management information is in most organizations nowadays obtained by information systems. These information systems generally convert generated data into communicable and useful information (2.6). Without proper communication the information obtained by the system can become useless (2.7).

2.1 Definitions related to management information

There are various definitions related to management information that need to be clear before a management information system can be developed. These definitions are presented in the upcoming paragraphs (2.1.1, 2.1.2 and 2.1.3).

2.1.1 Management information

The following definition of management information is used in this research: **Management Information** [MI]: A set of information elements which are used by the management of an organization to obtain insight in the performance of an organization and to support decision making, needed to steer and control the organization.

2.1.2 Information

Information can be defined as "data that has been put into a meaningful and useful context and communicated to a recipient who uses it to make decisions". So, in order to

communicate intelligence or knowledge, information can be used. The characteristics of good information are relevance, timeliness, accuracy, cost-effectiveness, reliability, usability and exhaustiveness. Information needs to keep these characteristics on an aggregated level. (Ramesch Babu, Sigh, & Sachdeva, 1997)

2.1.3 Observation, data, measures and metrics

The set of information elements forming management information consists mostly of measures and metrics. A measure is a standard unit used to express the size, amount, or degree of something. Basically, measures can be seen as quantified observations. An observation in its turn can be seen as a collection of data, facts and statistics, collected for reference or analysis. If this data is assigned with a certain amount or degree it becomes a quantified observation: information. Examples of information are monetary values or the numbers of people. Quantified observations can be turned into measures, like the development cost or amount of trainees. Metrics are defined as a system or standard of measurement; derivatives of measures. Rates, percentages, averages and ratios are common types of metrics. Figure 9 illustrates an example of how the observations of cost and the number of trainees are turned into the metric *development cost per trainee*.



Figure 9 From observation to metric, inspired on: (Savkin, 2015)

2.2 Possible uses of management information

The information embedded in management information can be used for different purposes depending on the actors who get insight in the information. The main uses of management information are to improve organizational performance, effectiveness and efficiency (2.2.1) and to aid management control (2.2.2). Besides stimulating improvements and aiding management control there are also some general other uses of management information (2.2.3). Bersin (2013) developed a four level maturity model for the use of data in human resource development and corporate L&D. This framework identifies four categories of possible uses for data, analytics and management information in the L&D context (2.2.4).

2.2.1 Improve organizational performance, effectiveness and efficiency

The main argument to obtain and use management information and to implement information systems is to improve organizational effectiveness and organizational efficiency (Hevner, March, Park, & Ram, 2004). These improvements should ultimately lead to an impact on organizational performance. Organizational performance encompasses, as mentioned earlier in 1.2.2, three specific areas of firm outcomes: financial performance, product performance and shareholder return. Organizational effectiveness is broader than performance, since it captures organizational performance plus the plethora of internal performance outcomes. This plethora of internal performance outcomes are for instance, more efficient operations or performance outcomes broader than monetary valuation, like corporate social responsibility. Efficiency is defined as effectiveness over cost, where costs are not only financial, but can also include other types of resources like time or materials. Due to the effectiveness element in efficiency, efficiency is generally placed under the concept of organizational effectiveness. (Richard, Devinney, Yip, & Johnson, 2009)

2.2.2 Management control

Another use for management information is to aid management control. Veen-Dirks & Wijn, (2004) describe three types of management control: diagnostic, interactive and strategic control, for which management information can be used.

Diagnostic control

Diagnostic control occurs when management information is used to monitor, diagnose, the organizational results. Management acts when those results lie outside the predefined limits (Figure 10). Diagnostic control requires from its management information system the ability to collect data and measure the output of processes. Also the standards, the norms and benchmarks, required for comparison of the results need to be defined. Finally, managers



must have a possibility to act on the indicated results and should know what can be done once the results differ from the norm value, or lie outside the limits (Veen-Dirks & Wijn, 2004). The latter requirement means that the information presented for diagnostic control is preferably of the category "*actionable information*".

Interactive control

Interactive control is most often used for changing the organizational or operational strategy along with the changing environment around the organization. For interactive control a subset of management information, found to be important in relation to the strategy, is used for discussions between actors like managers and employees. In these discussions the actors can think of actions that will alter the situation as indicated by the management information (Veen-Dirks & Wijn, 2004).

Strategic control

Strategic control is used to test and, when appropriate and possible, alter the strategy. The difference with interactive control is that strategic control uses a formal system, including management information, which indicates changes in the assumptions underlying the strategic planning. In this way the strategy is not only changed when the results differ from the plans, but also if the strategic plans seem flawed. The ability to perform strategic control depends on the design and operation of the strategic-control system, in which a management information system plays an important role (Veen-Dirks & Wijn, 2004).

2.2.3 Other general uses of management information

Besides performance improvement and management control, management information could also be used for other purposes. Some example uses are: to inform higher management and other stakeholders about the current state of operations, to provide feedback, to make predictive analyses, to evaluate or to justify certain processes/decisions. In general the availability of reliable, well-defined and well-communicated management information can have many benefits for an organization; it could give a more impactful focus for discussions and it could support rational decision making.

2.2.4 Use of data and management information in corporate learning and development

Due to the dynamics in technology and an increasing amount of technological possibilities the world is using ever more information technology and thereby becoming more data driven. Many organizations are making use of these developments and use the data generated in their processes for analytical purposes. With analytics organizations are able to make predictions, to reveal certain trends and correlations, or to proof causality between phenomena, all ultimately to enhance both organizational performance and management control.

In the fields of human resource development and L&D most organizations already collect at least some employee metrics and data. However, linking the relevant metrics to business results in order to understand correlation, causality, and predictability is found to be a tough task (Harvard Business Review analytic services, 2014). Bersin (2013) has developed an analytics maturity model which defines four stages in which organizations or departments involved in human resource development and L&D can be positioned (Figure 11). At stages 1 and 2 organizations use their data for reporting purposes, either reactive or proactive. At stages 3 and 4 organizations use their data for analytical purposes (Bersin, 2013).



Figure 11 Bersin's HR analytics maturity model, source: (Bersin, 2013)

The higher the stage in which an organization can use information, the more value it will create. However, the amount of effort it takes to rise along the stages also increases. Of the assessed organizations in his research 86% finds itself at stage 1 or 2. Between organizations at stages 2 and 3 there seems to be a kind a chasm, hampering progress among the stages (Bersin, 2013). Some main causes for this chasm are:

- Data-related problems;
 - Low data quality, lack of data, data out of date, inaccurate data, unexplained outliers, conflicting data, lack of data standards, duplicates of data sources, lack of data definitions and invalid data (O' Leonard, Blackstrom, & Payne, 2014).
- Skill level in analytics and management information of L&D and HRD employees;
- Lack of resources for analytics and data management and;
- Lack of insight in stakeholder information needs (Harvard Business Review analytic services, 2014)

If these causes of the chasm could be eliminated or reduced, it would be possible for L&D departments to reach higher levels of maturity and to become more data, and thereby performance, driven.

2.3 Types and levels of management information

Since management information can incorporate different information elements, multiple types and typologies of management information can be distinguished. (2.3.1 till 2.3.4) The sources of management information and the audiences can vary within and per organization, resulting in the existence of different levels of management information (2.3.5).

2.3.1 Descriptive, diagnostic, predictive, prescriptive information

Information can be categorized in different ways. In relation to management information, which is often used to monitor whether managerial goals have been achieved, four types of information can be distinguished (Figure 12). Descriptive information describes, in the context of an organization, the as-is situation. An example is an answer to the question *What is number of L&D products in our portfolio?* Diagnostic information is used to describe the gap between the as-is and ought-to be; *What is wrong with this specific learning solution?* Predictive information describes the possibilities of what could happen; *What would happen if we hire more trainers?* The fourth type of information, Prescriptive Information, aids managers in their decision making by providing information to answer questions like: *What should be done to increase the quality of our learning solutions?* (Harsh, Connor, & Schwab, 1981)



Figure 12 Types of Information, source: (Harsh, Connor, & Schwab, 1981)

When the four types of information are linked to the four stages of the maturity model discussed earlier, it becomes clear that each maturity stage of the model requires other types of information. Where descriptive information could be enough for the information needs in stage 1, the other stages would require more "advanced" types of information. Predictive analytics would for instance require predictive information. For management information it implies that the more "mature" managers want to use information in their decision making, the more advanced and devised that information itself should be.

2.3.2 Objective versus subjective measures

Measures can be divided over the categories objective and subjective. Objective measures are seen as impartial measures; they are without personal bias or prejudice of the observant. Examples are development time and production cost, which both can be objectively measured. Subjective measures are influenced by the one who does the observation. Subjective measures are often used to measure quality aspects, for example how good certain training was according to the trainees. For the development of the desired management information it is important to know whether a certain considered measure is objective or subjective, as it influences how the measure should be interpreted and used. (Richard, Devinney, Yip, & Johnson, 2009)
2.3.3 Lagging and leading indicators

There is a difference between so-called lagging and leading indicators. Lagging indicators are typically output oriented, often relatively easy to measure but harder to influence. Leading indicators are input oriented, in general harder to measure but easier to influence when known (Poel, 2013). Lagging indicators are used to measure results, outputs and outcomes, while leading indicators can be used to predict or influence a certain outcome. Both are needed to respectively monitor and steer the performance. In the case of L&D product development the amount of program developers can be seen a leading indicator, while the number of programs developed over a certain time could be seen as lagging indicator.

2.3.4 Key Performance Indicators

Key Performance Indicators [KPIs] are a set of measures that focus on the factors most critical to an organization's success. KPIs tell management how their organization is performing in their critical success factors and, by monitoring them, management is able to increase performance (Parmenter, 2015). The idea behind KPIs is that they reflect strategic objectives of the organization (Slack, Brandson-Jones, Johnston, & Betts, 2006). KPIs can be used for management control.

2.3.5 Levels of management information

In most large organizations multiple layers of management and employees can be found. Each layer has its own objectives, goals, strategies, resources, priorities, span of control, tasks and responsibilities. These differences make that each manager has his or her own specific information needs and each manager therefore requires different measures and metrics. Most executives, CEO's, CFO, VPs etc., have an interest for high-level management information. This high-level information often has a coarse granularity indicating the overall performance of their organization in terms of profit and loss. The middle management on its term is often more concerned about the performance of the individual critical processes, like the development time of a product or the number of employees required for a project. Therefore middle management requires a finer granularity of management information, focused on a deeper level within the organization.

2.4 Determining/identifying information elements

In both theory and practice multiple procedures and frameworks exist to determine information elements and to identify KPIs from other metrics. In general the processes to determine information elements can be divided in bottom-up (2.4.1) and top-down approaches (2.4.2) (Figure 13).

2.4.1 Bottom-up approach

The bottom-up approach starts at the measures level which embodies all possible measures that could be constructed. These measures need to be selected first so later metrics can be derived and selected for the second layer. The third layer is formed by KPIs, which are selected metrics found to be critical to the organization.



Figure 13 Top-down and Bottom-up approaches to identify are determine KPIs, inspired on: (Unilytics, 2015) KPI Karta

A danger of solely using a bottom-up approach to select KPIs lies in the strategic "cartbefore-the-horse" mistake. Some managers assume that they could simply select some standard metrics from a long-list and apply these as being their KPIs. However, KPIs should be determined from the strategy level and objectives (Parmenter, 2015). With the strategy and objectives in mind, KPIs could be derived and selected from all the possible metrics and measures based on the critical processes. Another danger of the bottom-up approach lies in number of possible observations, which is almost infinite. The large number of possibilities to define and derive measures makes it hard to select only those metrics that are key to the performance, instead of ending up with an information overload in terms of countless numbers of "important" measures and metrics. In order to avoid the potential dangers for sole bottom- up usage, proper selection of KPIs should use at least some elements of the top-down approach as discussed in the upcoming paragraph.

2.4.2 Top-down approach

A top-down approach is one of the means to focus management information and KPIs and to reduce the number of metrics used for management control. In theory and practice several methods and frameworks exist to determine KPIs using a top-down approach. Two of the best known methods are the Balanced Score Card method [BSC] introduced by Kaplan & Norton, (2007) which includes both financial and non-financial measures (Appendix I), and the various Critical Success Factor [CSF] methods (Veen-Dirks & Wijn, 2004).

The top-down approaches all start at the high level of goals, mission, vision and objectives (Veen-Dirks & Wijn, 2004). These corporate goals, mission, vision and objectives are settled within a certain (market) environment. In this environment an organization determines its strategy and strategic position, in order to achieve its desired goals (Porter, 1996). Once the strategy and strategic position are clear, most top-down approaches look at which factors or processes are critical for success. These critical success factors and processes are vital for an organization and its success, since they often affect the core businesses. Once the critical success factors have been identified on the tactics/operations level, managers determine the short-term goals and actions for the critical factors and processes. In order to keep control over these factors and their actions, managers determine which metrics become their (key) performance indicators, in which the results of the actions and decisions should become visible.

2.5 Management Information and KPI pitfalls

The approaches to determine management information elements and identify KPIs as presented in the previous section might look straightforward and perhaps even relatively simple. However, in reality it seems that these approaches are not as simple as they appear and that choosing the wrong indicators can have severe consequences for the success of an organization. Some examples of found management information and KPI pitfalls, like having un-actionable information, are presented in Appendix II.

2.6 Management Information Systems

An Information System can be defined as "Interrelated components working together to collect, process, store, and disseminate information to support decision making, coordination, control, analysis, and visualization in an organization" (Laudon & Laudon, 2007, P. G-7)

The various kinds of information systems that could be used in a company can be distinguished in operations support systems and management support systems. Management information systems [MIS] can be placed in the latter category. MIS refers to a computer-based system that provides managers with management information, and thus with tools to organize, monitor, steer, evaluate and manage departments within an organization. In a broad sense, MIS are a support tool for several organizational tasks, including decision making and decision analysis. Decision support systems are quite comparable to MIS however, where decision support systems support decision-making in **all** its phases, MIS are support tools for decision-making (McLeod & Schell, 2007).

In most organizations several types of (management) information systems can be found, due to the different management levels, functional areas and organizational problems within and an organization (Figure 14).



Figure 14 Information Systems are designed for different management levels, functional areas and organizational problems, adapted from: (McLeod & Schell, 2007)

As presented above due to the variety of differences in organizational problems between the functional areas and at the management levels, multiple kinds of information systems exist. Each of these systems has its own architecture. In general, different users of a MIS share databases to obtain the information. The data is generated during the daily operation and by the performed processes within the organization. In most organizations the data is processed by data/information and knowledge specialist and data analysts. These employees construct data and information sets in the form of measures and metrics. This information can be shared or communicated in many ways to the various audiences who have an interest in the information (Figure 15). The current state of technology allows a lot of automation in these processes. Various software tools for MIS have been developed, which allow employees with less expertise and skills in information systems to obtain and construct management information.



Figure 15 General structure of a management information system, adapted from: (Barnett & Vance, 2012)

2.7 Communicating management information

In order to achieve the goal of a management information system, supporting managers in their managerial practices, communication of the management information elements plays an important role. Communication bridges the gap between the information and its users. For effective communication of management information it is first of all needed to determine the desired information content for the various audiences. Also the timing and type of communication should be defined; what, when, how and how often information will be presented. (Phillips J. , 1997). In the communication of information also the context of how the information is presented relates to the effective use of the information.

There are multiple ways to present management information. Three commonly used communication media are dashboards, reports and presentations. The term dashboard refers to a graphical tool that allows users to view data using charts, dials and other visual approaches to understand business data. Preferably the information delivered by the communication media is actionable and presented in such a way that it fits the users' information needs. For decision support it is helpful if information is presented in an intuitive manner. Appendix III provides examples, with fictive numbers, of how different ways of data representation can influence the ease of use the incorporated information.

2.8 Summarizing conclusion

The aim of this chapter was to answer the sub-question: What is management information and how can information elements be determined? Therefore the general theory of management information and accompanying systems has been discussed in order to get a better understanding of the design artefact. Management information and information in general have been defined. Also it is described how information elements (e.g. metrics and measures) are derived from observations and how this can be done using a management information system. Also the various kinds, usages and levels of information are presented, which shows that each desired use of information has its specific type of information, and that good information is relevant, timeliness, accurate, cost-effective, reliable, usable and exhaustive on all levels. Key Performance Indicators form a specific category of management information elements which can be defined or indicated using a top-down or bottom-up approach. A top-down approach, like the Balanced Score Card method, starts at the strategy level of an organization and derived information elements looking at the critical processes and performances. A bottom-up approach starts with at all the possible metrics and makes a selection of these that become KPIs. The use of management information in decision making has various consequences for an organization. It will influence how managers see and interpret their environment which on its term will influence the decisions they make for the operations and the achievement of the strategic goals. Managers need to be aware of this before they use management information as a support tool.

The next chapter will continue with a case description of KBC as corporate learning and development department using a systems perspective. The goal of the upcoming chapter is to support a better understanding of the context around the desired artefact by describing the corporate L&D environment and how it operates.

3 Understanding the corporate L&D environment of KLM Business Campus

The aim of this chapter is to provide a partial answer to the sub-question How does a corporate learning and development department operate and what information elements can be derived from the operation? Without understanding of the environment, the organization, people and technology, of a corporate Learning and Development department it would be almost impossible to develop an artefact which can evaluate the value brought by corporate learning. A lack of understanding would also make it hard to develop a desired, viable and feasible information system (Hevner, March, Park, & Ram, 2004). In order to get an understanding of the corporate L&D environment chapter 1 already introduced the organizational structure of Air France-KLM and the position of KBC. It also discussed the roles within KBC and the counterparts of the departments at AFKL. In order to later derive the management information elements from the top down the missions, visions and strategies within AFKL, the commercial division and KBC will be presented as the first topic of this chapter (3.1). Thereafter the focus will shift to the process and job levels of a corporate L&D department using a systems view (3.2). The ten major elements of this view help to obtain more insight in the corporate L&D environment, required to develop a management information system (3.3 till 3.12). The results of using the systems view on corporate L&D will also help in identifying the processes to derive management information elements from as presented later in chapter 5.

3.1 Missions, visions and strategies of Air France-KLM, the commercial division and KBC

Most organizations operate according to their goals, mission, vision and strategy. The performance of an organization is partly dependent on how well these elements are defined and followed, and how well the organisation operates aligned to the strategy. The strategies, missions and goals often reveal themselves in the form of short phrases and/or concepts/constructs, considered important by the organization. The mission, vision and strategy have a large impact on a corporate L&D environment. The impact reveals itself for instance in the operation of the department and the available resources. Missions, visions and strategies differ per (type of) company, which implies that the appropriate information elements also differ. In order to determine the information elements using a top-down approach later in this research and to get a better understanding for the environment, the missions, visions and strategies of AFKL (3.1.1), the commercial division (3.1.2) and KBC (3.1.3) are presented in the upcoming paragraphs.

3.1.1 Mission, vision and strategy of Air France-KLM

The communication of the strategy at KLM presents itself in three ways. First there is the *company profile* communicating the general strategy, as presented on the website of Air France-KLM. For the longer term, the strategic goals, mission and vision are presented in the various media considering *Perform 2020*. For the short term the *KLM Flight plan 2015* presents these strategic elements of KLM. Table 5 summarizes the content of the various documents.

Table 5 Strategic content on KLM level, adapted from: (KLM, 2014), (KLM Corporate Communicatie AMS/DR, 2015), (KLM, 2015)

Communication channel	Categories	Content
	Mission	 With Air France, KLM is at the forefront of the European airline industry Achieve profitable growth that contributes to both its own corporate aims and to economic and social development. Create sustainable growth at Schiphol, to gain access to any market that will increase the quality of its network and to maintain a level playing field for all industry players Ensure a balance between the company's interests and those of the people living and working close to the airport
Company Profile	Vision	 Be at the front of the industry by being smarter than the rest Be the customers' first choice, to be an attractive employer for its staff and, a company that grows profitably for its shareholders Have smart partnerships and pioneer on new destinations Respond to market opportunities and technological developments, to deliver customers a contemporary product.
	Customer focus	 Deliver a strong transfer product and a high-quality network in order to satisfy the flexibility needs of the customers Focus on the individual behind the customer, since every customer is different.
	Employer KLM	 Availability is central to our personnel policy, every employee should be healthy and to enjoy working for as long as possible Employees are also encouraged to expand their skills and experience through training and changing jobs from time to time. Rapid changes in technology and customer markets demand organisational flexibility. This flexibility is also expected of individual employees.
	Corporate Social Responsibility	 KLM and Air France together want to set the standard for an integrated approach for CSR in the airline sector. The CSR policy is directed at customers, employees and society.
	The environment	 The aviation environment is rapidly changing with competition of low-cost-carriers and gulf carriers
Perform 2020	AFKL group strategy Perform 2020	 Customer focus Profitable growth Competing costs Different way of working
	KLM-vision	 Be a customer focused, innovative and efficient leading network carrier.
	Main goals KLM	 Invest in the future Reduce cost Increase productivity
KLM Flight plan 2015	Rules of the road	 We play as a team to win Every day. We say what we do - and we do what we say. We respect each other, work with discipline and put safety first. We focus on improvements with big impact-no taboos. We make decisions based on facts and thorough analysis.
	Other strategic objectives categorized under:	 Customer and product Network and fleet Operations People and Organizations Finance

3.1.2 Mission, vision and strategy of the Commercial Division

For KBC as corporate L&D department the strategic content of KLM does have an impact, however it is on such a high level that the department does not have a direct impact nor control on all these elements. One level deeper in the organization, the commercial division level, the strategic goals, mission vision and objectives already become more tangible and controllable and have a more direct impact on the daily operation of KBC. The strategic objectives of the commercial division are presented in its *Business Plan 2015*, which is partly deducted, or translated, from the objectives presented in Perform 2020. This document can be seen as a more "personalized" strategic document, having division wide KPI's, under the strategic terms of:

- Win the customer
- Move fast
- Be the best team
- Make the budget (Commercial Division Air France-KLM, 2015)

The precise strategic content and KPIs of the commercial division are not presented in this research since they are too company specific and will therefore not help to understand corporate L&D in general.

3.1.3 Mission, vision and strategy of KBC

On corporate L&D department level, KBC itself does also have tacit proof for the existence of strategic objectives and formulated missions and visions. The elements of these documents are partly deducted from the higher levels, but also generated internally. Like Air France-KLM, also on KBC's operational level the strategic content elements can be dived in long- and short term. The strategic terms and content that is explicitly found at KBC is presented in .

Table 6.

Table 6 Strategic content on KBC level, adapted from KBC's internal sources

Communication channel	Categories/headers of strategic content	Actions related to the strategy
KBC Business Plan 2015	Commercial Business goals Win the customer Move fast Be the best team KBC's goals More Impact More Empowering More Cost effective More accessible	 The current projects running at KBC have been plotted under each of these goals in order to show what they contribute to these goals and how they align with the strategy.
	Personal goals	 Besides the departments goals each KBC employee has set its own personal goal(s) for 2015
``A different KBC ″ short term objectives	 Team development Procurement From knowledge to cash Perform administration with 2 employees Collaboration with ground services Lean administrative processes 	 Several employees have these strategic terms in their project portfolio, based on the objectives set for the longer term
"A different KBC" Long term objectives	KBC 2020	 Have clear strategic objectives, goals, plans and actions Be a crucial supporter for the professional growth of our customers Believe in talent Connect and inspire employees Give our customers high value products Reduce the amount of customers, deliver more custom made products and services
	Knowledge advantage	 Look at other corporate L&D departments to learn Communicate that knowledge and skills within the commercial division and AFKL will lead to cash (L&D enhancing the business)
	Internal and external appeal	 Make sure that KBC has the right internal and external appeal to its customers, managers and outside world
	Communication	 Marketing of the department using the latest technologies Communicate on a higher level within the organization
	Smart learning community	 Be the "beehive" for Air France-KLM when it concerns corporate L&D
	L&D (learning culture)	 Establish a shared vision on learning within the organization (play a role in the learning culture)
	Align KBC with the business	 Provide L&D employees (learning consultants) the knowledge and skills needed to align with the business
	Lean	 Lean internal administrative processes Lean L&D solutions (reduce non- productivity of employees due to L&D)
	Employees	 Having the right people in the right place

3.2 Applying a performance perspective on KBC

Since organograms as presented in chapter 1 only depict hierarchical positions, they have their flaws when used to fully understand the organizational environment (Rummler & Brache, 1990). An organogram lacks the strategy, culture and processes of the organization; the roles, capabilities and characteristics of the people, and the infrastructure, applications, communications architecture, and development capabilities of the technology. To compensate for the deficiencies of organograms and to obtain a better insight in the organizational context of corporate L&D, a systems view as described by Rummler & Brache (1990) is taken to assess KBC as a corporate L&D department. The systems view describes the organizational context using ten elements (Figure 16).

The systems view implies that an L&D department can be seen a processing system (1) which converts various resource inputs (2) into products and services (3). These products and services are provided for the markets of the L&D department (4). The L&D department should be guided by its own internal criteria and feedback (5). The market places its orders and provides its feedback to the L&D department (6). The idea of the systems view is that the customer is the ultimate driver of an organization. The system view also looks at competition within the system, whose orders are driven by the same customer. Competitors also draw from the same resources in order to deliver comparable products (7). The entire operation of the L&D department is embedded within a larger environment, in which all kinds of, sometimes uncontrollable, forces have impact (8). To deliver its products to the markets there are various processes and functions within the department (9). These functions are controlled by the management, whose role it is to keep balance between the internal and external environment (10) (Rummler & Brache, 1990).



Figure 16 KLM Business Campus using the systems view, based on: (Rummler & Brache, 1990)

This section briefly described the ten different elements of the systems view in relation to corporate L&D. The upcoming sections describe KBC as corporate L&D department with more detail, focusing on each of the ten elements (3.3 till 3.12). For this detailing of the L&D department various sources are used. For each element KBC serves as a case example. Where possible and appropriate the information is extended with theories or other practices in order to become more relevant for corporate L&D in general.

3.3 See a corporate L&D department as a processing system

This first step in the systems view is to see KBC as if it is an independent processing system, operating within the Air France-KLM environment. This implies that for instance the higher line management levels within the commercial division and AFKL and L&D departments at other divisions within the company are not seen as part of KBC as L&D department, but as part of the general environment or even as competition.

3.4 The resources of a corporate L&D department

The resources, inputs, of an L&D department can be divided into four categories: materials (3.4.1), human resources (3.4.2), financial resources (3.4.3) and technology (3.4.4).

3.4.1 Materials

Material resources are used within the internal processes of the L&D department to operate, and produce and deliver the outputs. In many cases there are external suppliers for these material resources. The material resources can be divided according to the value they deliver to the corporate L&D department, and the impact they have on L&D.

On the one hand there are material supplies for the daily operation of the L&D department. These resources include for instance workspaces, computers, lunches and office supplies. These kinds of material resources do not have a large impact on the product outcomes of L&D but they are still needed to keep the corporate L&D department running. On the other hand there are material supplies which are directly related to the delivered products and services of the L&D department. These supplies, like tablet computers to deliver the training content, classrooms and books used in the training, have an impact on the final product and thus on the market. Therefore this latter category of material resources and their quality has an influence on the corporate L&D outcomes.

3.4.2 Human Resources

Employees, their skills, competences, knowledge, motivation and the time spend working, form the major part of the human resources which an L&D department uses to deliver its product to the market. The human resources therefore have a relative large impact on the corporate L&D product outcomes. In the systems view people are seen as the performers, each with his own role, tasks and responsibilities to run the business (Rummler & Brache, 1990). The organization of human resources, as well as the role descriptions, tasks responsibilities and capabilities of the performers differ per corporate L&D department.

In order to deliver learning content which is aligned with the L&D needs of the business, the teams involved in L&D are often multidisciplinary. A variety of skills, competences, knowledge, expertise and disciplines (Table 7) are needed in order to deliver valuable products.

Disciplines at a corporate L&D department		
Performance consulting	Program management	
Instructional design	Change management	
Information Architecture	Community management	
Knowledge management	Measurement and Evaluation	
Content development	Business intelligence	

 Table 7 Disciplines needed at a corporate L&D department, source: (Bersin & Associates, 2009)

Since learning content can be very specific, employees involved in L&D need to work in close collaboration with other parties inside and outside the organization; like business experts, line managers or third-party training providers.

3.4.3 Financial resources

In order to operate and deliver products, most corporate L&D departments are dependent on the financial resources provided by their organizations. There are different ways in which organizations set up their financial constructions for corporate L&D. One way is by setting individual learning budgets, which employees can spend on training to learn and to develop themselves. Another way to finance an L&D department is to pay any cost that will arise from providing learning and development. Preconceived learning and development paths related to job functions form a third option to determine the L&D cost and budget. Since L&D departments are part of the wider organization, the amount of available financial resources differs per organization.

Financial proof

In some organizations an L&D department will have to prove its (financial) contribution before investments are made. In others the learning culture or environmental circumstances are different and managers accept that learning has its costs, for which the monetary benefits do not have to be proven. Grohmann & Kauffeld (2013), point out that the latter situation is getting more and more unique. There is a rising demand among (line)managers for more insight in the (financial) contribution of learning organization within their companies. This caused the fact that L&D departments will more and more have to prove their (monetary) contribution to the organization.

Financial management

There are various reasons to monitor the expenses and costs of the L&D department and its operations. Determining the total expenditure, obtaining insight in the relative cost of a learning program, calculating cost versus benefits, monitoring efficiency and planning budget are some examples. The cost of the L&D department can be classified, allocated, obtained, and communicated in different ways and on different levels, depending on what the organization suits best. If cost information is included in management information it is important to define a shared vision on how, and on which levels, the cost will be classified and allocated. It is also important to present the benefits alongside the cost, since otherwise managerial control could go wrong. (Phillips J. , 1991)

Financial resources at KBC

For its financial resources KBC is dependent on the general environment of Air France-KLM. KBC works with a yearly budget to finance its operational cost. In order to provide learning solutions for the different employees worldwide, there is the so-called pot concept. The pot is an available budget, owned and controlled by KBC, which can be used to develop and deliver training. For some tailor made learning solutions the customer pays for the cost incurred to deliver the desired products or services. Since the corporate L&D department has no external customers outside Air France-KLM, there is no (current) need to generate profit.

3.4.4 Technology

Technology forms the fourth category of resources used to deliver the products. Examples in the L&D context are learning tools and materials used to deliver training. ICT supporting tools, like the learning management system [LMS] and training evaluation tools are also part of the technology used at corporate L&D departments. This latter kind of technology is used to ease the administration and evaluation processes and they could form the main data sources in the management information system. Table 8 shows some of the most often used tools and technologies at corporate L&D departments.

	Tools & Technology				
Learning Management System [LMS]	Content Development	Rich Media	Performance Support		
Learning Contents Management System [LCMS]	Content Management	Mobile	Virtual Classroom		
Learning Portals	Collaboration	Assessment	Reporting and Analytics		
Talent Management Systems	Social Network	Search tagging	Measurement systems		

Table 8 Tools & Technology used in corporate L&D, source: (Bersin & Associates, 2009)

Within Air France-KLM there is currently the trend to standardise the tools and technologies, mainly the ICT, used at the different departments involved in L&D and human resources. In this way the L&D processes and collected L&D data could become more and more comparable within the organization.

3.5 The outputs of a corporate L&D department

The outputs, products and services, delivered by an L&D department differ per organization since each market, organization, has its unique L&D needs. The learning demands of an industrial plant differ from those of a sales organization. Despite the fact that each L&D department will have its own specific output in general the L&D output can be divided into L&D programs and training as products (3.5.1), and L&D advice as a service (3.5.2).

3.5.1 Learning and development programs as products

L&D programs can be seen as the main output of an L&D department. The exact type, manner and content of the learning depends on many factors like: the learning needs, available budget, trainer, trainees, available resources, time, learning and corporate strategy, internal processes, instructional design approach, vision on learning, experience and capabilities of the L&D department. Within an L&D department there is often a large product portfolio containing a variety of non-homogenous types of learning products. The Enterprise Learning Framework of Bersin & Associates identifies 14 types of learning programmes (Table 9). The learning programs can be developed and/or provided internally or externally and be obtained from a catalogue, or be tailor made.

Learning Programs			
Leadership Development	On boarding	Project and Process	Systems
Management	Compliance	Product Knowledge	
Career development	Customer service	Customer Education	IT Skills
Technical professional	Sales	Channel Training	

Table 9 Types of learning programs, source: (Bersin & Associates, 2009)

At KBC most types of the learning programs as presented in Table 9 are developed and provided. The current trend at KBC is to standardise and digitalize the training where appropriate in order to lower the cost. This is done for instance with on boarding training (basic training for new employees), compliance training and general IT skills products. Once the required skills and learning needs become more Air France-KLM specific, like leadership and career development, customer service, product knowledge and sales, specific tailor-made solutions are developed. The tailor-made solutions are made in close in collaboration with the customer and/or with third parties.

Types of learning

People, and thus employees, are constantly learning. They gain kills, knowledge and/or competences, everywhere and at all times. Employees are most of their time far from initial education and training systems. Various practitioners in the L&D environment argue that unintended learning, taking place anywhere outside the classroom, is a lot more important, relevant and significant than learning taking place in formal settings. In theory and practice multiple types of learning are distinguished, in multiple frameworks explaining the importance and relevance of intentional/unintentional and formal/informal learning. (Werquin, 2007) Each framework has its own typologies and definitions whether a certain type of learning is seen as formal or informal.

Formal and Informal Learning

Formal learning can be seen as those learning activities that have explicit learning objectives to gain knowledge, skills, and/or competences and are organized and structured around these objectives. From the learner's point of view, formal learning is always intentional. Informal learning can be defined as the opposite form or learning; making it never organised, having no objectives in terms of learning outcomes and informal learning is also never intentional from the learner's point of view (Werquin, 2007).

KBC acknowledges the distinction between formal and informal learning. As many corporate L&D departments, KBC wants to deliver the best formal learning possible and facilitate and stimulate informal learning within the organization. The department therefore often refers to the so called, 70:20:10 model for learning and development, described and studied by various authors over the years. The main message of this model is that 70% of learning comes from jobs, 20% from other people 10% from formal courses and reading.

Learning approaches

Table 10 shows 26 forms of learning and learning approaches. Corporate L&D departments, like KBC, nowadays support informal learning and the associated approaches like corporate social networks and knowledge portals containing videos, blogs, communities of practice and forums. KBC is also sometimes organizing conferences to make their customers aware of the available products, for instance about leadership, management or career development programs.

Various types of learning and learning approaches			
Instructor-led training [ILT]	Search	Learning/Knowledge portals	
virtual Instructor-led training [vILT]	Books and Articles	Expert directories	
Games	Video's	Social networks	
Simulations	Blogs	Communities of practice	
E-learning	Forums	Conferences & Colloquium	
Blended learning	Wiki	Coaching & mentoring	
Testing and evaluation	Podcast	Performance support	
Feedback	After action reviews	Development planning	
Rotational assignments	Quality circles	Development planning	

Table 10 Various types of learning and learning approaches, source: (Bersin & Associates, 2009)

3.5.2 Learning and development advice as service

Learning and development advice for employees and their managers is the main service that KBC and most other L&D departments deliver. Different types of advice can be distinguished. First there is the learning advice related to Human Resources Development, which can include proactive advice to give certain training in order to improve the knowledge, skills and/or competences of the employees. A second type of advice is based on the expressed market needs and can be found during the consultation process with the customer. These consultation processes are used to translate L&D needs into learning solutions. The two types of advice are rooted in distinct market approaches. Development advice falls under the active market approach. L&D consultation after an expressed learning need falls under the passive market approach.

3.6 The market of a corporate L&D department

The market of a corporate L&D department consists of those parties that have a need for L&D solutions or learning advice. The market can be internal, within the general environment of KBC, but it might also be that external parties are allowed to use the L&D department (3.6.1). KBC provides most of its products for the "Commercial division market" which can be distinguished in seven geographic regions: Europe & North Africa, Middle East, Africa, Caribbean & Indian Ocean, Asia Pacific, North America and Latin America. Each region has its own Air France-KLM representatives like sales persons, marketers, managers and HR managers forming the customers in that specific region (3.6.2).

3.6.1 Market scope

Within larger organizations, as in Air France-KLM, it might occur that multiple L&D departments exist, each with its own specific market scope. Which markets an L&D department aims for, depends on many factors like the strategy of the L&D department, the available resources and influence of the general environment. As mentioned earlier the main market for KBC is the commercial division. On a less regular base various other products for other divisions, like ground services, are also developed and or delivered by KBC.

3.6.2 L&D customers

The customers of the corporate L&D departments are often heterogeneous in nature. Their specific learning needs, capabilities and learning impact outcomes are shaped by all kinds of variables as jobs, roles, competencies, existing skills and knowledge, ambition, motivation, support, proficiencies, preferences, personality, cognitive capabilities, demographics, geographies and business problems (Colquitt, LePine, & Noe, 2000).

3.7 The internal feedback within a corporate L&D department

The internal feedback mechanisms and performance criteria form a guideline for evaluation on how a department, like the corporate L&D department, is performing. It provides insight in how well the internal processes are operated in terms of efficiency, effectiveness, accuracy and alignment. Internal feedback should first of all evaluate how well the products were delivered to market, how they were received by the customers and how well they fitted their needs. The information needed for this feedback is related to training evaluation, which is described under *customer feedback* in the upcoming section. Besides training evaluation it is also important to review how efficient and effective the given resources were transformed into the products and services. Finally, internal feedback could also be used to compare the internal performance vis-a-vis competitors.

At KBC several internal feedback mechanisms exist in which knowledge and/or lessons learned from the various projects are shared among the employees within the department or within the organization. For this purpose the corporate social network, I-share, is commonly used.

3.8 The market needs and customer feedback of a corporate L&D department

The markets served by the corporate L&D department have their specific L&D needs. How these needs occur and how an L&D department identifies these is discussed first (3.8.1 and 3.8.2). After the occurrence of needs and the delivery of the products and services customers provide feedback towards the department (3.8.3), mainly in the form of training evaluation (3.8.4).

3.8.1 Learning and development needs and how they occur

From the systems perspective each employee is seen as a performer. The performance of the employees is influenced by many factors. One group of factors is formed by the knowledge skills and competences of an employee needed to achieve his/her job goals. The purpose of training is often to enhance the knowledge and skills, ultimately resulting in better performance. The need for training therefore often occurs when managers, or employees themselves, think or feel that there is a gap between existing and needed competences, knowledge and/or skills. The need for training might also arise if people see the potential of a certain program that could enhance their performance. For managers, employees and the corporate L&D department it is important to realize that the systems perspective sees training only as a single alternative for performance improvement. This is because the perspective argues that many other factors, like the process design and job goals, also influence performance (Rummler & Brache, 1990).

3.8.2 Identification of learning and development needs

The market needs for corporate L&D exist within the employees of the organization. It is often the responsibility of managers to identify these L&D needs of their employees. Once they have an identification of their needs they could go to the corporate L&D department and see whether and how their needs can be served (Malone, 1997). If an L&D department works in this way it is reactively serving its market. In this approach the L&D department assumes that its market is aware of their learning and development needs and otherwise they have to accept that it can miss potential customers. If the market is not aware of its needs, which is often the case in the context of L&D, or not aware about what the corporate L&D department has to offer, a proactive market approach might work better (Rummler & Brache, 1990). KBC operates using both a reactive as well as a proactive market approach.

Reactive approach

If an L&D department reacts on a request for training it should, according to Rummler & Brache, realize that the requester often has not conducted a thorough analysis and might

even not be aware that training is often not his only option. This requires the L&D department to go into consult with the requester, try to understand its contexts and determine whether training or another L&D solution is needed to achieve the objectives and if so, how this could be done (Rummler & Brache, 1990).

Proactive approach

By using a proactive market approach a corporate L&D department becomes part of the human resource development process. It supports this process by proactively identifying L&D opportunities for its customer that could serve their, sometimes latent, needs. In this way a corporate L&D department could create a link between the strategy of the company and the offered L&D products and services. A corporate L&D department could also be part in the creation of personal development plans for the employees. In sum, a corporate L&D department takes an active role in their organization by linking the L&D context to the overall organizational performance (Rummler & Brache, 1990).

3.8.3 Feedback from the corporate L&D market

Besides the contact with the market for identification of the L&D needs and delivery of products and services, there also exists a feedback link between the corporate L&D department and its market. The feedback itself can be found in explicit or implicit forms. For explicit feedback on the products and services corporate L&D departments very often use training evaluation. The implicit form of feedback lies in the actions of the market after interaction with the L&D department; whether customers return to the L&D department, or are likely to recommend the L&D department to others within the company. Feedback of the market could be used to evaluate how well the products were received and whether they made an impact for the organization and also to evaluate the internal operation of the corporate L&D department.

At KBC explicit market feedback is gained by training evaluation. Since training evaluation is used at many corporate L&D departments, and provides information about the value of L&D, it is discussed in the upcoming paragraph.

3.8.4 Training Evaluation

Training evolution can be defined as a systematic process to determine how effective and efficient certain L&D activities have been. By the means of evaluation a corporate L&D department, its customers and the general environment can determine whether the learning goals have been achieved and if the corporate resources have been allocated in a proper fashion. In this way evaluation can help in for instance resource planning, L&D content and context decisions and revisions, strategic planning and personnel decisions. (Phillips, 1997)

In the upcoming sub-paragraphs attention is first paid to the differences between formal/informal and summative/formative evaluation. Then attention is paid to the different training evaluation approaches. Thereafter *level evaluation frameworks* and their linkages with the business and L&D environment are presented. This training evaluation part ends with a brief description of the training evaluation tool, *Metrics that Matter*, currently used at KBC.

Formal/Informal and Summative/formative evaluation

In general two types of evaluation can be distinguished: formal and informal evaluation. Formal evaluation uses structured approaches and evaluation tools to assess the performance or outcomes of a certain activity, based on facts and figures. Informal evaluation can be seen as a less rigorous form of evaluation, often based on intuition or small groups of respondents.

Another distinction within evaluation can be made between summative and formative evaluation. Summative evaluation is used to evaluate the end result. Formative evaluation evaluates all the steps taken from the start till the current situation at the

time of evaluation. Further differences between summative and formative evaluation in relation to training evaluation can be found in Table 11. Note that the evaluation object in this table can be both the internal processes and operation of the L&D department, as well as the outcomes of these processes. Also the evaluation audience has a lot of influence on the types of questions asked and required information communicated by evaluation.

	Formative Evaluation	Summative Evaluation	
Purpose	To improve current process and L&D programs	To analyse utility, impact, effectiveness, efficiency and alignment	
Audience	L&D administrator and corporate L&D employees	(potential) customers, managers in general environment, corporate L&D employees	
Preferred Executer Internal evaluator		External evaluator	
Major characteristic	Timely	Convincing	
Often used measures	Often informal	Formal (Valid and reliable)	
Required frequency of data collection	Frequent	Limited	
Sample size	Often small	Usually large	
General questions asked	What is working? What needs to be improved? How can it be improved?	What results occur? With whom? Under what condition? With what L&D solution? At what cost?	
Design constraints	What information is needed? When?	Which claims does the corporate L&D department wishes to make using evaluation?	

Table 11 Differences between formative and summative evaluation in training evaluation, adapted from: (Kirk, 2014)

Training Evaluation approaches

L&D, its outcomes, and the impact on the business are notoriously hard to measure in a rigorous and relevant manner. As a result it is hard to evaluate and control/manage corporate L&D. Over the years theory and practice have constructed multiple theories and frameworks for training evaluation. Some examples are the level models of Kirkpatrick, Phillips and Kaufman. Then there exist the context, input, reaction, outcome [CIRO] framework of Warr, Bird and Rackham and a similar context, impact, process, product [CIPP] model developed by educators. (Phillips, 1997) As a reaction to the flaws of the widely used model of Kirkpatrick, Brinkerhoff developed his Success Case Method (Rees, 2012).

Most of the frameworks discussed below can be categorized as level frameworks. They are selected to be discussed since currently KBC itself is using level frameworks for their training evaluation. The selected frameworks are presented in order to show their similarities and differences, critiques, and relevance for this research in terms of workable frameworks to determine potential information elements that assess corporate L&D.

The Kirkpatrick Four-Level framework

The four level approach of Kirkpatrick, developed from the 1970's is a well-known and commonly used framework for the evaluation of training in the corporate L&D environment. The four levels on which training is evaluated can be found in Table 12. For each of the levels there exists one general question that needs to be evaluated for that level. For each level multiple methods of evaluation can be used.

Level	General Question
1) Reaction	Were the learners pleased with the program? (A customer satisfaction measure)
2) Learning	What did the participants learn in the program?
Behaviour	Did the participants change their behaviour based on what was learned?
4) Results	Did the change in behaviour positively affect the organization

Table 12 Kirkpatrick's four levels of evaluation, source: (Phillips, 1997)

In Kirkpatrick's model reaction is defined as what the L&D participants thought of the intervention, including materials, facilities, trainers, content, method, etc. The evaluation of learning, level 2, zooms in on the extent in which principles, skills, techniques and facts have been acquired. In this framework behaviour, level 3, is evaluated to determine the extent to which skills and knowledge learned in the intervention have an impact on the behaviour of the participant. The evaluation of results, level 4, focuses on the improvements for the general environment and customers like cost savings, work output changes and quality changes. (Phillips J. , 1997)

The Phillips Five-Level framework: including "return on investment"

Phillips is one of the authors who extended the four level framework of Kirkpatrick by adding the monetary value of results and cost of L&D and then calculate the return on investment [ROI] of an L&D intervention as a fifth level (Table 13). In line with the five levels Phillips also developed a ROI process model (Figure 17) prescribing the steps to take for obtaining the ROI of L&D programs. These steps are categorised under the process steps of: evaluation planning, data collection, data analysis and reporting.

Level	Brief description
1) Reaction & Planned action	Measures participant's reaction to the program and outlines specific plans for implementation.
2) Learning	Measures skills, knowledge or attitude changes.
3) Job applications	Measures change in behaviour on the job and specific application to the training material.
4) Business Results	Measures business impact of the program.
5) Return on Investment	Measures monetary value of the results and costs of the program, usually expressed as a percentage.

Table 13 Phillips's five level ROI framework, source: (Phillips J. , Developing a Results-BasedApproach, 1997)



Figure 17 ROI process model, source: (Phillips & Phillips, 2002)

Kaufman, Keller & Watkins's five levels of evaluation

As a reaction on shortcomings of Kirkpatrick's model, Kaufman et al. developed a five level framework for evaluation of human performance improvement interventions Table 14. The framework adds levels missing in the four level model in order to incorporate some, as Kaufman, Keller and Watkins, describe them, key corporate evaluation questions every company should ask itself:

- "Do you commit to delivering organizational results that will have beneficial impact, consequences and payoffs for external clients, including positive payoffs for society?
- Do you commit to delivering timely organizational outputs that are of desired quality to external clients?
- Do you commit to timely delivery of the quality products that individuals or small groups within the organization require?" (Kaufman, Keller, & Watkins, 1995)(p.10)

Based on these questions the principals and processes of evaluation are expanded to consider all interventions associated with strategic and tactical planning, performance improvement, organizational development, customer satisfaction/total quality, and societal contributions on three levels: micro, macro and mega. (Kaufman, Keller, & Watkins, 1995).

Table 14 Five levels of evaluation of human performance improvement intervention, adapted from:(Phillips J. , Developing a Results-Based Approach, 1997) (Kaufman, Keller, & Watkins, 1995)

Evaluation Le	evel	Kirkpatrick's level
5) Mega	Societal consequences Societal and client responsiveness, contributions and payoffs	(not included in Kirkpatrick)
4) Macro	Organizational results Organizational contributions and payoffs	4) Results
3) Micro	Successful Application Individual and small group utilization within the organization	3) Behaviour (performance)
2) Micro	Successful Acquisition Individual and small group mastery and competence	2) Learning (acquisition)
1b) Process	Reactions Method-means and processes' acceptability and efficiency	 Reaction (only partial, since efficiency and quality are missing in Kirkpatrick)
1a) Input	Enabling Availability and quality of human, financial and physical resources	1) Reaction

Brinkerhoff's Success Case Method

Also Brinkerhoff developed a method in reaction to the framework of Kirkpatrick. What Brinkerhoff claims is that performance improvement within a company cannot be achieved by training alone. Therefore the training intervention, as in Kirkpatrick's model, should not be the only object of training evaluation according to Brinkerhoff.

In his article Brinkerhoff describes it as follows:

"Despite the fact that effective human resource development (HRD) operations are vital to overall organization success most organizations fail to evaluate the impact and return on training investments that they could and should. Traditional evaluation models and methods, with their focus on simply assessing the scope of training's effect, do little to help reap greater performance and organizational impact from Human Recourse Development and, in fact, can even undermine this purpose." (Brinkerhoff, 2005, p.86)

Since from the systems perspective organizational performance is influenced by many factors, Brinkerhoff urges that the proper focus of training evaluation should be on the whole organization. The results should be communicated to both the management and training function. Brinkerhoff suggests that evaluation of corporate L&D should address the following questions:

"1. How well is our organization using learning to drive needed performance improvement?

2. What is our organization doing that facilitates performance improvement from learning? What needs to be maintained and strengthened?

3. What is our organization doing, or not doing, that impedes performance improvement from learning? What needs to change?" (Brinkerhoff, 2005, p.88)

In order to provide answers to these questions and enlarge the scope of training evaluation Brinkerhoff suggests the Success Case Method [SCM]. The SCM is rooted in both evidence- and narrative-based evaluation, combining quantitative and qualitative data. By using SCM one analyses the best practices, the best and least examples of what performance interventions have produced, in order to prove that the implementation of the L&D program has caused positive performance impacts.

The SCM approach consists of two major steps. First, a brief survey is send to a large representative sample basically asking: "*To what extent have you used your recent training in a way that you believe has made a significant difference to the business?*" From the survey results the success and unsuccessful cases can be selected. Then the second step is to further analyse these specific cases to find out what worked, what not, and why (Brinkerhoff, 2005). Rees expanded the two major steps into five steps, which are presented in Table 15.

Table 15 Five steps of Brinkerhoff's success case method, source: (Rees, 2012)

Step	
1	Develop an impact model: Identify the goals of the learning opportunity and determine how these goals are connected to business needs. The impact model
	defines what success should look like.
2	Survey participants : to identify best cases and worst cases. (For example, a survey question might ask: How have you applied what you learned to achieve a business result?
3	Obtain corroborating evidence that would "stand up in court" (e.g., using interviews, document reviews or other methods).
4	Analyse the data
5	Communicate findings : Share what successes have occurred and what organizational resources have supported these successes. As important, share examples of non-successes. What barriers kept people from applying what they learned.

At KBC, consciously or unconsciously, the SCM is used in some cases when the department communicates the results of their programs towards higher management levels and customers. However this not done in a structured fashion as suggested by Brinkerhoff and Rees.

The Bersin & Associates Learning Impact Measurement Framework®

As consultants in the environments of human resources, human resource development and corporate L&D, Berin & Associates have developed their own framework to measure the impact of learning, and thereby evaluate L&D (Figure 18). It is based on their general four phases model, from problem definition to organizational performance improvement. In this model each of the phases serves as a guide for what and where to measure. Furthermore, the framework includes four training processes taking place during the phases performed by the L&D department. In the framework nine programmatic, environmental and organizational factors have been indicated as having an influence on the impact of training. Eventually the framework shows nine measurement areas which, according to Bersin (2007), includes all of the possible measures one can implement to build a complete L&D measurement solution. For some of these nine measures the authors have described what should be evaluated (Table 16). It seems that all these measures are obtained post-event, so after the L&D intervention. However, many of the measure require definitions for evaluation set up early in the L&D core processes, like business goals or desired audiences.



Figure 18 The Bersin & Associates Learning Impact Measurement Framework®, source: (Bersin, 2007)

Table 16 The nine measurement areas,	adapted from:	(Bersin, 2007)
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Measure	What/how to evaluate?				
Adoption	 Did you reach the desired audience? Did they complete or comply as desired? Who did not comply and why? 				
Utility	 How well do the programs solve the workforce's particular problems? How well did it align to the specific job related problems and issues? Would learners recommend this program to their peers? 				
Efficiency	 How efficient and cost-effective was it? How did it compare to other similar programs or competitive programs? How well did it use the learners time? 				
Alignment	 How well were the program business priorities defined? How well did business units buy in on the value of this program relative to other investments? 				
Attainment	 How well did you meet specifically defined client (business user or customer) objectives? e.g. revenue, time to market, compliance, time to complete etc. 				
Individual performance	Indicators asked of learners and managers to gauge performance improvements. Specific operational measures identified in the performance consulting process				
Organizational performance	General business measures or HR measures that are already captured in the organization. Special surveys can be used to determine indicators using the "wisdom of crowds."				

Linking training evaluation to the Business and L&D environments

During the interviews used for the cross-case analysis one representative of a corporate learning and development department explained, in a v-model framework, the linkage between the operations of their businesses (on general and L&D level) and the evaluation of training. For the latter the interviewed L&D department used a five level evaluation model. The model, depicting the described framework, was drawn by the representative during the interview and is presented in Figure 19. Below the figure the framework is briefly explained and some comments are given, using the information from the interview.



Figure 19 Linking training evaluation and Business L&D operation

The explanation of the v-model starts at the intervention level. On this level the L&D solution/learning intervention takes place. As described above, these interventions can be evaluated using different levels, presented on the right-hand side of the v-model. The lowest two levels evaluate the intervention/training itself, levels 3 and 4 evaluate the impact of the intervention on the business performance. On level 5, ROI, one should decide whether the costs of conducting a ROI study outweigh the benefits of being able to present the monetary benefits.

On the left-hand side of the model the business and L&D operations are presented, linked to the levels of evaluation. In these operations two domains, L&D and business, can be distinguished. According to the interviewed representative it should be the task of the corporate L&D department to design and arrange everything to deliver the right interventions. However, in order to be able to deliver the right interventions, those that have an impact on business performance, it is the task of the business to communicate their business performance needs, and the lack of skills, knowledge and competences they face in order to satisfy these performance needs.

The cause for most of the difficulties faced by many corporate L&D departments lies in the interaction between the business and L&D domain. Often the managers and employees in the two domains have different priorities, focuses, roles, and understandings of the current situation. Also different kinds of expertise and accompanying business languages are of importance at the two domains: business is focused on profit, L&D on well-designed interventions. The conspiracy of convenience, described by Jennings (2010), helps to understand the problems occurring at the melting point of these two domains (Appendix IV). It is however at the same melting point of L&D and business, in which the corporate L&D department can play its most valuable role: translating the business performance needs into the right products (intervention or advice) in order to enhance skills, competences and knowledge needed to improve the performance of the company (Jennings, 2010).

Training Evaluation tools

Over the years, often based on the evaluation frameworks as discussed above, multiple companies have developed, training evaluation tools and technologies. One of these tools, currently used at KBC, is Metrics that Matter [MTM]. These kinds of ICT tools can be used by the corporate L&D department to evaluate training, often by the use of surveys, and generate reports from the evaluation results. By having this tool, part of the technology infrastructure that supports provision of management information is already available.

Training evaluation at KBC

The evaluation model currently used at KBC is grafted on the models of Kirkpatrick and Phillips (Figure 20). It evaluates learning interventions on four levels using a standardized questionnaire constructed in collaboration with the provider of the evaluation tool. This supplier uses the questions as proposed by the studies of Kirkpatrick and Phillips (Appendix V).



Figure 20 Evaluation model of KBC, source: (KBC, 2014)

Business needs / Impact

Under the impact objectives KBC evaluates the effectiveness of a training/program for the organization. Did the acquired competencies of participants contribute to the performance of the organization?

Job performance / Application

On the application level KBC evaluates if an individual has been able to apply the information/ knowledge and skills learned in practice.

Learning needs / Learning

On the learning level KBC evaluates if the participants have acquired the information and/or knowledge and skills offered in a learning situation.

Preferred interventions / Satisfaction

On the satisfaction level KBC evaluates if participants are satisfied about a training or development program. Questions are about content, used methods, trainer or facilitator, environment, organization, etc.

KBC Questionnaire for training evaluation

In order to evaluate training KBC uses a standardized questionnaire containing 23 questions under 9 categories (Table 17). These questions tap the concepts of the four levels of the evaluation model. Since the questions are rather generally formulated, the evaluations can be made more specific per training, asking for instance if specific learning goals have been achieved.

Table 1	7 The 23	questions an	d nine	categories	from	KBC's	standard	auestionna	aire

Category	Question					
Despendent Information	-Manager Name					
Respondent information	-Manager E-mail					
	-The instructor was knowledgeable about the subject.					
Instructor	-The instructor's ene	ergy and enthusiasm	kept the participants			
	actively engaged.					
Environment	-The physical environment was conducive to learning.					
Courseware	-The scope of the material was appropriate to my needs.					
Learning Effectiveness	-I learned new knowledge and skills from this program.					
	-I will be able to app	ly the knowledge an	d skills learned in this			
	program to my job.					
	-This program aligns with the business priorities and goals					
Job impact	identified by my organization.					
	-How much of your total work time requires the knowledge and					
	skills learned in this program?					
	-This program will im	prove my job perform				
	-This program will im	cluding this program	estimate how much			
	vour job performance	a related to the cour	rse subject matter will			
	improve		se subject matter win			
	-This program will hav	e a significant impact	on: (tick all that apply)			
	increasing quality					
Business Results		productivity	employee			
			satisfaction			
	decreasing costs	increasing sales				
			customer			
		Ddecreasing risk	Satisfaction			
	time					
	-The participant mat	erials (manual, prese	entation handouts, job			
	aids, etc.) will be useful on the job					
	-My manager and I set expectations for this learning prior to					
Support Tools	attending this program.					
	-After this program, my manager and I will discuss how I will					
	use the learning on my job.					
	-I will be provided adequate resources (time, money,					
	equipment) to succes	sfully apply this prog	iram on my job			
	-This program was	a worthwhile inves	stment in my career			
	What about this program was most useful to you?					
	-What about this program was least useful to you?					
Return on Investment	How can we improve the program to make it more relevant to					
	your job?					
	-If you feel you will be successful in applying this learning					
	please provide a few tangible examples of how you will apply it.					

Comparability of KBC's evaluation results

Since the evaluation tool provider does the training evaluation at/for multiple L&D departments worldwide, evaluators are enabled to compare their results with a benchmark. In the context for management information it is important to note that this evaluation model is currently standard at KBC and other L&D departments within AFKL are making progress to work with the same tool, model and questions; so in time it should be possible to compare evaluation results on an inter-organizational level.

3.9 The competition of a corporate L&D department

In general, competition is drawing on an equivalent set of resources in order to provide products and services that serve the same or similar market needs (Rummler & Brache, 1990). In the L&D context competitors can be seen as internal or external L&D departments where those having learning needs can go to. In those cases where multiple L&D departments occur within the organization, like in the situation of KBC, one can also speak of internal competition. However, since these internal competitors are dependent on the same general environment and operate for the same company and markets, it would be healthier to frame the internal competitors as colleagues, and speak in terms of coopetition.

3.10 The environment around a corporate L&D department

Each corporate L&D department operates in its own wider environment, which influences the processes and relations between the other elements of the systems view. Some general influences are governmental, economic and cultural influences (Rummler & Brache, 1990). Also trends and developments in the environment of the organization, (e.g. strategy, structure & culture and processes) the people, and the technology have their influence on the corporate L&D department and its products. The goals, missions, visions and strategies have already been described earlier in this chapter. The variety of strategic content found over the different organizational levels will become helpful in determining the management information elements in order to align them with the corporate and department goals, mission, vision and strategy. In the upcoming paragraphs the organizational culture influence on L&D (3.10.1), the learning culture influences (3.10.2) and the changes in the environment (3.10.3) are discussed since these, together with the strategy, are seen as the main influential environmental elements around corporate L&D.

3.10.1 Organizational Culture influences on L&D

Each organization has its own organizational culture, which can be seen as the "personality" of an organization. Organizational culture refers to a system of shared meaning held by members of the organization, distinguishing the specific organization from another. The essence of organizational culture has seven primary characteristics:

- Innovation and risk taking;
- Attention to detail;
- Outcome orientation;
- People orientation;
- Team orientation;
- Aggressiveness and
- Stability (Robbins & Judge, 2012)

Within large organizations, like Air France-KLM, there are often several subcultures alongside the dominant culture. In the case of KBC it can be said that the commercial division as well as the L&D department itself, and other corporate L&D departments in Air France-KLM, have their own subcultures.

The organizational culture and the subcultures have has a strong influence the operation of the corporate L&D department and therefore on the quality of the L&D products. The organizational culture also has an influence on the individuals and the organization as a whole in the context of their desire to continuously increase knowledge, competences and performance. Table 18 shows the elements of L&D on which the corporate culture has an influence according to Bersin & Associates (2009).

Organizational culture influences on L&D					
Executive support	Customer Listening				
Learning integrated with business planning	Innovation programs				
Development planning	Mentoring and knowledge sharing				
Knowledge sharing	Employee feedback				
Performance and talent management	Learning from mistakes				

Table 18 Corporate cultural influences on L&D, source: (Bersin & Associates, 2009)

3.10.2 Learning Culture influences on L&D

One specific branch of organizational culture is the learning culture within an organization. "*In a learning culture, the acquisition of new knowledge and skills is supported by aspects of the organization's environment that encourage surfacing, noticing, gathering, sharing, and applying new knowledge*". (Gill, 2009)(p.29). The learning culture within an organization has various consequences for the learning outcomes, job satisfaction and transfer of training. The responsibility for a strong learning culture, if desired, lies in many hands, not only in those involved in HR or in the corporate L&D department, but also in those of in the higher management and the employees themselves.

3.10.3 Changes in the environment

The environment in which an organization or department resides, the context, its people and technology, is not static but continuously changing. All these changes, like the improvements of technologies, shifts in (learning) culture, shift of focus, change of roles, or adaptations in the processes can have their influence on the operation of a corporate L&D department. These influences can reveal themselves in many shapes like: the number of people working at the department, the available budget and attention for L&D, technologies used for L&D products and services, etc. The changes in the environment make that organizations and their departments should adapt accordingly.

3.11 The internal processes of a corporate L&D department

The internal processes are used by the L&D department to deliver its products and services. Of all elements of the systems view, the corporate L&D department is likely to have the most influence on how the internal processes are structured and performed. To assess the performance, management information often includes elements about how well the processes within a business are taking place, regarding efficiency and effectiveness. In order to determine what process management information to include, the internal processes need to be understood. Once there is a general understanding of how the most important processes, the core processes, are taking place at a corporate L&D department, it should be possible to identify the critical success factors and thus the measurement areas where performance could be measured. This paragraph will first discuss the instructional design process, which is the core process of most L&D departments (3.11.1). Then KBC's so-called oerproces will be discussed, which can be seen as KBC's interpretation of the instructional design process (3.11.2). Finally, the internal processes of a corporate L&D department according to the supplier of KBC's learning management system will be described (3.11.3).

3.11.1 Instructional design process

One of the core internal processes within a corporate L&D department is its instructional design process. In theory and practice multiple models and frameworks exist which describe how a corporate L&D department should or could operate. Some examples are: the widely used training cycle, the model of planned learning and the objective oriented training evaluation model. Some models describe the instructional design process as linear, while others see it as an iterative process. However, most models describe the process in the terms of the ADDIE model.

ADDIE model

A commonly used approach to for instructional design is based in the steps Analysis, Design, Development, Implementation and Evaluation [ADDIE] (Figure 21). Since ADDIE is used as an umbrella term, many L&D departments give their own interpretation to the model. For this reason the number of steps and the level of detail within the model differ per user or author (Molenda, 2003). Thereby, the ADDIE model as presented in the figure depicts the instructional design process as linear. In practice it seems however that most L&D departments face a more iterative nature of the process.



Figure 21 ADDIE model

3.11.2 "Oerproces": the instructional design process at KLM Business Campus

Also at KBC the instructional design process is seen as the core internal process. As mentioned, corporate L&D departments often have their own representation of their core processes. Currently KBC uses its so-called "oerproces" (Figure 22), showing similarities with the ADDIE model. The oerproces consists of the six steps: Intake, Analysis of the learning request, Designing the learning solution, Execution, Administration and Evaluation. Within these six steps sub processes are prescribed, which can be found in Appendix VI. The oerproces serves as a reference for the employees of the KBC in which they can find what should be done during the internal process. One of the visible usages the oerproces is during the weekly kick-off, when the current projects are discussed based on their position within the cycle. Knowing the oerproces steps is helpful in determining the management information and performance measures, since it gives insight in how the internal process of the corporate L&D department could/should be conducted and where measurement or data collection could be done.





3.11.3 KBC's organizational processes according to Bloomville

Another representation of KBC's core processes can be found in an advice report of Bloomville (Bakx, 2013). Bloomville is the learning management system provider of KBC. In this report the author mentions that there are six main processes within a corporate L&D department under the labels: demand, supply, operations, evaluation, support, and user administration. (Figure 23) Each of these main processes consists of multiple sub-processes that are conducted by the various functions within KBC.



Figure 23 L&D department processes according to Bloomville, source: (Bakx, 2013)

Demand

Bloomville makes a distinction between four processes taking place under the header demand (Bakx, 2013). From a business perspective these processes can be seen as disciplines related to marketing (analysing needs and forecasting), Research and Development [R&D] (instructional design process), and vendor management.

Analysing learning needs

To conduct the needs analysis an L&D department could choose between a structured or unstructured approach. These two approaches can be used for both the reactive and proactive type of needs assessment as discussed earlier. An example of bringing structure into the process is by having a set of standard steps and questions which are required to take and ask once a training request comes in (Rummler & Brache, 1990). For management information the structure of standardised procedures helps to collect the right information since there is insight in what going on where in the process.

Training development

The development of training can be seen as the product development process going on in an L&D department, the oerproces at KBC. As mentioned before, L&D products can be developed in a reactive manner; based on the requests and expressed needs, but also in a proactive manner in order to create new learning solutions or enhance existing ones. The development of learning solutions can be done in consultation and collaboration with the customer to incorporate his wishes regarding the contents, materials used, learning goals and so on.

Forecasting

Generally a forecast describes how the market will evolve over time, what the needs will be, how these needs change, who will form the market and how large the market will be. Part of the forecast can also include the expected developments in the environment, the changes of learning technologies or a financial forecast. The forecast can be used as a guide for decision making within an L&D department. From the forecast the department could determine how to serve the market, what kinds of training to provide or learning solutions to develop.

Vendor management

As discussed under the inputs of an L&D department, just as in any business, suppliers are used in order to make and deliver products. In the vendor management process it is decided which suppliers to involve. This choice for a supplier can be based on many

factors like price, quality and availability. Within the vendor management process, along with choosing a supplier, also the agreements with the preferred suppliers are set up.

Supply

Under supply Bloomville includes three sub-processes: catalogue management, advice and planning (Bakx, 2013). In general business terms these three processes can be compared to: product portfolio management, advice as part of "engineer to order" or proactive performance consultation, and planning like production scheduling in a factory.

Catalogue management

In its catalogue an L&D department presents the current supply towards the market. Catalogue management includes adding and removing training from the catalogue and therefore mainly focuses on the standardized types of training. Tailor-made training is often not included in the catalogue since it is specifically engineered to order and can therefore often not be directly copied for other customers. However, it could be beneficial to communicate the tailor-made solutions since their success stories can inspire other customers and show the possibilities of what the products developed and provided by the corporate L&D department can deliver.

Advice

As discussed under products and services a corporate L&D department can give different kinds of advice. The choice that an L&D department has is to use either a structured or unstructured approach to come to and give the advice. The nature of the product and the differences between customers make that a set of standard advices is not likely to work. However, a uniform process to arrive at the advice can be helpful in assessing the given advices using management information.

Planning

By planning the translated L&D requests are lined out over a certain time period indicating when certain training will be provided. In this way the L&D department and the market has insight in when the products will be available and when certain costs will occur.

Operations

Bloomville refers to operations not as being the daily practice of a corporate L&D department but to the processes underlying the subscription, delivery and financial completion of the training (Bakx, 2013). These are the processes that are often performed in collaboration with the customers and require the input from both the L&D department and its customer.

Evaluation

Seen from the systems perspective, evaluation concerns gathering and using feedback on the delivered products and services. It indicates how the customers react on the delivered product and how and where L&D contributes. (Grohmann & Kauffeld, Evaluating training programs:development and correlates of the Questionnaire for Professional Training Evaluation, 2013) The internal evaluation of the processes is already discussed under *The internal feedback within an L&D department*. The general ideas in theory and practice about evaluation of L&D and training have been discussed under *Training evaluation*.

Support and user administration

Support processes are those processes within an L&D department that support the employees and customers of the L&D department during the steps discussed above. The main goal of these supportive processes is to unburden the L&D employees and/or the customers. This support can be in the form of answering questions, for instance on how someone can subscribe for a training. Support can also include support on the ICT systems and technology used to perform the processes. For management information the

data generated by the support user administration processes can be of high value since they generate data like how many people have been registered on a certain training.

3.12 Managerial control in a corporate L&D department

The role of the managerial control is to control and align the internal and external environment of the corporate L&D department. Management is often responsible for establishing and monitoring the strategy and goals of the department, tracking the performance of the employees and processes, monitoring both the internal and external feedback and allocating the resources (Rummler & Brache, 1990). During all these tasks the management information system is one of the support tools that could be used to monitor and control the L&D department. The lack of such a management information system at KBC, combined with the desire to obtain more managerial control, led to the request for this research.

3.13 Summarizing conclusion

In this chapter KBC served as a case example of a corporate L&D department in order to provide a partial answer to the question: *How does a corporate learning and development department operate and what information elements can be derived from the operation?* KBC's organizational context has been discussed, together with some general findings in theory and practice about the environment of corporate L&D. This chapter thereby provides a better understanding of the corporate L&D environment, its people, and the processes all required for the development of the information system. With the more detailed description of training evaluation, insight is obtained in how the value contributions of corporate L&D are currently assessed and evaluated in theory and practice. The descriptions of the processes can later be used to identify information elements for the management information system from the top-down.

The next chapter will continue with a cross-case analysis of Dutch corporate L&D departments with a focus on their management information (systems) and the measures and metrics they obtain and use to manage their L&D department and communicate towards management and the outside world. In chapter 5 the other half of the question *How does a corporate learning and development department operate and what information elements can be derived from the operation?* will be answered.

4 Cross-case analysis of management information in corporate learning and development

Chapter 2 discussed management information and management information systems in order to understand the artefact under development for corporate L&D. Chapter 2 also showed that information elements can be derived using a bottom-up approach or a top-down approach. The previous chapter described the corporate L&D from environment a systems perspective, identifving the people, organizations and technologies within a corporate L&D department and its environment. The combination of these two parts provides the context (Figure 24), needed to develop the artefact and derive the management information elements in relation to corporate learning.

Now that a sufficient understanding of the context



Figure 24 Combination of management information and the learning and development environment, adapted from: (Keller, 1998)

is provided, this chapter will start with the identification of the desired information elements. For this purpose this chapter uses a cross-case framework to identify which management information element are used in the practice of corporate learning and development. It thereby provides an answer to the sub-question: What management information elements are currently used in theory and practice to manage corporate L&D departments and evaluate their value? The cross-case analysis can be seen as a bottomup approach to identify possible information elements. The goal of this chapter is to obtain insight in how other organizations involved in the same practice, evaluate the value of their corporate L&D activities and with which information they manage the department. Six representatives of Dutch corporate L&D departments have therefore been interviewed (4.1). Most of them shared their management information, the included elements and how they use it (4.2). On the shared information elements an analysis has been performed in order to identify the commonly used concepts, measures and metrics, and thus information elements. (4.3). During the interviews in became clear that based on how companies use data and information for L&D, they can be positioned at different stages of the maturity model. So as a side result the interviews support the existence of the maturity model in practice (4.4). Finally, the context in which the cross-case

possible to construct five MI prototypes for KBC which can, in a future stage of the information system development, be used for evaluation purposes (4.5). **4.1 Interviewing six Dutch corporate learning and**

development departments

For the cross-case analysis five managers, varying from general manager to global chief L&D, and one analyst of six Dutch corporate L&D departments have been interviewed (4.1.1). To secure the anonymity of the interviewed companies and their employees, their names will not be mentioned within this thesis. Instead the companies have been assigned a number. Some general information about the cross-case companies and their L&D department is described in order to provide some background information about the information elements. (4.1.2).

departments communicate their MI is discussed. From the context representation it is

4.1.1 Interview approach and questions

In order to find out if and how corporate L&D department use management information in general six representatives involved in L&D for Dutch organizations have been interviewed. It has been chosen to conduct the interviews in a relatively unstructured fashion in order to explore the problem area of management information for corporate L&D. Relatively unstructured means that only some of the questions asked during the interview were predetermined. These questions include: "Can you tell me something about how is your L&D department organized?" as the answer of this question can be used to compare the department with the others. Two other predetermined questions are: "How does your organization and/or L&D department use management information?" and if management information was used: "Which information do you obtain in order to use, steer and manage?" Besides the predetermined questions the representatives were left free in what they wanted to talk about in relation to corporate L&D and management information. Due to these unstructured aspects of the interviews some representatives shared more than only their information elements. Examples are formed by the model presented in Figure 19 and the ways that information is obtained and communicated presented later in this chapter. Three of the six interviews took place at the location of the organization/L&D department, one at KLM and two via telephone.

4.1.2 General information about the cross-case L&D departments and their customers

The upcoming sub-paragraphs describe some general information about the corporate L&D departments with whom the interviews have been conducted. For some departments this information is more detailed than for others, caused by the limited information available during the interview, information known to the representative, or willingness to share information. The more details are known, the better the context of the case companies can be understood. However, more important than understanding the context with general information is that all interviewed departments have at least shared how they deal with L&D management information, which information elements they use to manage their department, and which information they communicate within their companies. The latter will be discussed in the upcoming section.

General information L&D department 1

L&D department 1 operates for a company whose core business is to provide audit, tax and advisory services. The Dutch market of the L&D department incorporates 3000 full time equivalent [FTE] employees. The L&D department is part of the Dutch Human Resource branch of the organization and is also linked to a global L&D/HR department. The learning products offered by the department include most of the possible types, like corporate on-boarding, legacy compliance and skill and competence building. Some of the training content is developed in-house, some globally and some by third parties.

General information L&D department 2

Public transportation is the core business of the organization for which L&D department 2 operates. The market for this L&D department includes all employees working for this organization within the Netherlands, more than 23.000. The L&D department operates as a separate business entity within the larger organization. Internally, the department operates in a matrix structure to serve the different business entities/ L&D markets within the organization e.g. drivers, managers and maintenance engineers. The roles within the L&D matrix are: a general manager, business directors (who maintain the relations with the customers and who know the specific customer learning needs), developers and designers (of L&D products), trainers, administration employees and procurement staff. The department offers most possible kinds of L&D products. However, still a lot of "old-fashioned" instructor-led internal classroom training is needed in this organization due to the nature of the work and legislation requirements.

General information L&D department 3

The organization for which L&D department 3 operates is a global financial institution offering banking services. Worldwide this organization has more than 53.000 employees, who all need L&D products and services. In this organization L&D is centralized but internally divided in 20 "learning groups", each for a different market segment. Through the learning groups the L&D department is organized in a matrix structure. The L&D department offers various kinds of training products like legislation, business academy,

financial training, skills and competences and bank training. Some training is provided inhouse, some by external parties, depending on what is most cost-efficient or whether the required expertise to provide the training is present. The department has to deal with about 1.000.000 training subscriptions each year worldwide, varying from e-learning to multi-day training sessions.

General information L&D department 4

L&D department 4 offers L&D products and services for a global management-consulting firm. Worldwide this firm has more than 17.000 employees. L&D for this company is centralized in the Netherlands where the Global Chief Learning Officer is located. This actor is responsible for the learning and leadership development of the company as a whole. At each location or region other L&D managers have been installed, or other HR employees take that role. This depends on the size of the office and number of employees. The L&D department provides all kinds of L&D products like e-learning, on-boarding, compliancy and leadership development. Some products are developed and facilitated internally and some by third parties or in collaboration with third parties.

General information L&D department 5

The core business of the organization for which L&D department 5 operates involves Telecom and IT services, mainly for the Dutch market. The market for the L&D department consists of all 18.000 employees working at the organization worldwide. All L&D products and learning solutions for the whole organization are centralized under one department/academy which is part of the Human Resources department. Like the other departments, department 5 also provides all kinds of L&D products for the variety of functions within the organization. Not all L&D related activities are performed in-house, as for instance the learning management system is managed by a third party and also some training is purchased from, and/or given by, external suppliers.

General information L&D department 6

The sixth L&D department operates for an organization in the energy and petrochemical sector. The targeted market of this L&D department depends on the organizational L&D needs, which are identified each year from the strategy and organizational targets in collaboration with the business and line managers. The main market consists of the employees of the Projects & Technology division of the organization. This division is also responsible for global safety & environment and contracting & procurement. Where most products are specifically targeted and tailor-made, some L&D products like, safety training or on-boarding are provided continuously for the whole division. Given its way of operation the L&D department is mainly offering L&D advice for the business level of the organization. Most L&D products are developed and provided by, or in collaboration with, third parties. However, since training in this organization requires facilities, materials and content that are company specific most training is facilitated internally at corporate locations.
4.2 Bottom-up identification of management information at the six L&D departments

During the interviews all representatives have shared or shown the information elements they have constructed and use within their organizational environment. Hereafter for each case-company these shared information elements are presented, most often in tables (4.2.1 till 0). The real context in which the information is communicated and the media used differs per organization; some use reports, while others use dashboards or presentations. The context of how the information is communicated at the various departments is presented in section 4.5.

4.2.1 Management information at corporate L&D department 1

L&D department 1 shared its information elements that can be found at their L&D scorecard (Table 19). This scorecard has been designed by the department responsible for global L&D. Each local L&D department has been asked to fill the dashboard with its own data. In this way the company should be able to evaluate and compare the different L&D departments worldwide, using the same information elements. In practice however, it seems that the definitions of the desired information are unclear, not communicated or that the definitions differ per region. Moreover, the way how the data is obtained differs per learning product, even within the same department. For this reasons the interviewed manager doubts whether the aggregated results, of for instance effectiveness and program quality, are meaningful. It seems like the department is dissatisfied with the granularity of the current desired and communicated information. This granularity is too coarse for proper decision making in the eyes of the department, even more since in this company the outcomes of the scorecard have a relative high impact on how the L&D department is assessed and managed by the global organization.

Table 19 Information elements derived from learning and development scorecard FY2014 L&Ddepartment 1

L&D scorecard items		
		Development (\$ value)
	Total Training invoctment	Delivery (\$ value)
		L&D administration (\$ value)
Efficiency-Operating	(\$ value)	External (\$ value)
statistics		Unallocated (\$ value)
(year-to data, quarterly compared including change	Investment per learner	
and board country average)	(\$ value)	Investment per learner category
	Investment to total revenue (%)	Investment Infrastructure (%)
		Investment Unallocated (%)
	Total learning bours	In class (hrs)
Efficiency- Learning hours (last twelve months)	(hrs)	TBL (hrs)
Learning hours per headcount (hrs)		Learning hours per function (%)
Progress towards technology based learning ambition (year to date %	% Technology based learning [TBL]	
compared to target)	% Virtual classrooms [VC]	
	L – – – –	ł
	Program quality	
Quality and Impacts to	Learning	
Canability (year to date	Impact to capability	Evaluation score: In-Class/TBL/VC
average)	Impact to performance	_
	Impact to organization	
	The second state of the second state in the second state of the se	
	have received	
Impact-learning culture (graphically per year)	The company provides me enough opportunities for learning and personal development	Evaluation score HR survey
	Colleagues are getting the training they need to meet our clients changing needs	

4.2.2 Management information at corporate L&D department 2

Corporate L&D department 2 choose its own information elements to steer L&D and to communicate towards its customers and the wider organization. The information shared during the interview originates from a yearly presentation in which the L&D targets are shared and presented to the management board. In this year's presentation the key words to operate the department and generate the information were: predictable, transparent and adaptable. The management board presentation contains multiple slides, each with its own information elements. On the slides of the presentation the current available data is compared to the yearly targets, or to previous years. The incorporated information elements are based on the several roles and task within the department. Within the management information there are four categories of metrics defined: the effort metrics, development and design metrics, execution metrics, the service centre metrics and the demand and supply metrics. Table 20 shows the general effort metrics, labelled KPIs, under the categories customer, efficiency and processes.

Table 21 shows the KPIs about those responsible for the design and development of the L&D products. In

Table 22 the metrics are presented that tell something about the execution of training. The service centre is the supporting branch of this L&D department and its KPIs are presented in

Table 23. Finally, Table 24 shows the KPIs for the employees involved in the demand and supply processes.

Table 20 Information elements derived from management board presentation about L&D of department 2; Effort Metrics

	Effort Metrics		
	КРІ	Yearly target	
er L	Realized number of requested training days	#	
Ĕ	Number of active users learning management system	#	
Ē	Satisfaction score training possibilities HR survey	#% (respondents > # (score)	
Cus	Evaluation satisfaction score participants	#	
	Non-productivity cost	€	
5	Purchasing advantage (discount)	€	
ů.	Management & support functions ratio L&D department	%	
Efficie	Billable hours L&D department	%	
ses	Project-control developers and designers (projects exceeding pre- determined time, budget, goals, objectives)	<%	
ocess	Number of quarters forecasted for development, design and execution	Time in quarters	
Pr	Administration time service centre per trainings day	#min	
	Time between training request and contact	% < #days	

Table 21 Department 2 Development and design metrics

Development and design metrics	Yearly target	
Rolling forecast budget spending	Q1 Q2 Q3 Q4 Q2: % Q3: % % Q4: % % % Q1: % % % %	
Compliancy of projects with development standards %		
Exceeding time and budget % (projects)		
Billable hours	% (total working hours)	
Redesign	 % redesign projects to lower cost % redesign projects to lower non-productivity 	

Table 22 Department 2 Execution metrics

Execution metrics		
Efficient use of budgets	Current	Target
Realization of requested learning solutions within	(# trainees /	
available budget	L&D	
	requests)	
Employability of L&D resources (human and material)	%	%
% occupancy training	%	%
% no shows	%	<%
Number of cancellations	#	<#
Quality		
Average score HR Survey	#	#
Learners satisfaction score	#	#
Success rate (for training with exam)	%	%
Predictability		
Project time (request – current solutions – time to start	# weeks	Max number of weeks
training)		
Lead-time project (time to design) versus time of		%
learning solution/training		
Number of re-planning of learning events caused by L&D		<%
department (mistakes, illness etc.)		
Flexibility		
Number of re-planning on request of the business		#

Table 23 Department 2 Service centre metrics

Service centre metrics		
	Current	Target
% Use LMS		>%
% Delivery according to standard		>% on time
Service time per training day		# min
% on-time project reports		>%
% on-time support incidents time and time to solution		>%
% on-time Publication in systems		>%

Table 24 Department 2 Demand and supply metrics

Demand and supply metr	ics	
	Current	Target
Number of users in LMS		+%
Number of available products in portfolio/LMS		#
Number of executed training		#
Growth target for number of coaching matches		+%
Growth target for number of professional pools		+%

4.2.3 Management information at corporate L&D department 3

During the interview department 3 claimed that most data sources within the company are, finally, linked, of good quality and up to date. From this data any desired information element (measure, metric or KPI) can be constructed using a support tool. The support tool can be seen as a management information sandbox that allows the creation of any desired measure and/or metric. The system allows the department to communicate information upon any request or need from anywhere in the organization. The information elements that can be constructed using the support tool can also be used for different ways of communication, e.g. tables, graphs, reports, and information sheets, fitting the needs of the audiences (Figure 25).



Figure 25 Information system used at L&D department 3

In general the L&D department has no standardized form for reports, scorecards or dashboards, but it satisfies any information request. However, during the interview it was mentioned that normally the department reported structurally on: budget, how external parties performed, a cost breakdown per country, and some general training metrics e.g. volume, occupancy of classes and number and types of training provided.

Due to the availability of the data and technology, the L&D department also performs predictive analytics. The L&D analyst indicated that in some cases it is hard to find a relevant and/or interested audience, who can react and take action upon the findings obtained by analytics. To illustrate: a correlation had been found between the marital status of employees and the number of products they sold. However, the usability of this information for a corporate L&D department is relative low as a company will never force any of its employees to marry. The usability of these kinds of findings is even more questionable as often only correlations can be found and prove for causality is hard to obtain.

Within this department technology is no longer the bottleneck to obtain and use management information. The representative indicated that the focus for management information is currently on questions like: "What information is needed and useful for our management?" and "On which (L&D) information can we steer and manage our business?" Practical and operational questions like "How much budget has been spent?" and "How many training hours have we provided?" can be answered using the sandbox tool.

4.2.4 Management information at corporate L&D department 4

The representative of this department claimed to have the technology and data in place, comparable to department 3. Therefore the department can react upon almost any information request. The management information, which is reported monthly by the department, is divided in some general information (Table 25) and information per audience (Table 26). All reported information is comparable on a yearly base, so trends can be analysed. This L&D department also uses the available information to assess and evaluate, according to Kirkpatrick's framework, the quality of their products; whether the right competences have been trained to the right employees and whether the training content can be applied in practice.

Table 25 General L&D information available and used at L&D department 4

General L&D information

- Number of people that have followed training
- Roles/functions of the trainees
- The (type of) training that has been followed by these people
- Cost of L&D in a breakdown per relevant category
- Time spend on learning
- Cost of external facilities
- Cost of vendors/ purchased training
- Location of the training + evaluation of that location
- Program utilization per program per (target) group of learners
- Program evaluation; Following Kirkpatrick's model: L1 and L2 always, L3 and L4 if cost of products are high and if program has the potential to be continued. ROI never, since it is believed that sound measurement and valid causality cannot be obtained and that CFO will not believe presented monetary values, instead Return on Expectations is used.

Table 26 L&D information available and used at L&D department 4 per audience

L&D information per audience			
Audience	Information monitored Measure/metric		
Chief Financial Officer	19D Expanditure (officiency 19D	#learning hours/cost	
[CFO]	Lad Expenditure/enciency Lad	Projects within budget	
L&D toom	Evaluation of products	Learning evaluation scores	
LQD tealli		Quality of the products	
	Expenditure	Total expenditure business unit on L&D	
	Satisfaction	Satisfaction score of training evaluation	
Governance body:	Choices of L&D department		
business with L&D	-Right training?	Learning goals compared to or related to	
needs	-Right competences trained?	business objectives	
	-L&D aligned with strategy?		
	Efficiency and effectiveness of operation	Often in the terms of cost and time	
Learners	Feedback on training	Learners are provided with the feedback	
Learners	reedback on training	results of the L&D products they used	
Vendors	Performance	Performance of the vendor, making use of	
		the training evaluation data	

4.2.5 Management information at corporate L&D department 5

The management information at this L&D department is divided between externally communicated (Table 27) and internally used information (Table 28). External information is mainly used to satisfy the investors of this L&D department and therefore mostly includes cost and budget driven metrics and measures. The internal information is used to evaluate the developed and provided products, based on learning analytics data obtained by evaluation in combination with the data of the learning management system. According to the representative reporting is currently not structured and most often happens ad-hoc and on request. The reports presented during the interview were constructed in collaboration with the provider of the learning management system, since they have access to the data and the expertise needed to construct the measures and metrics.

External MI	Category	Metric/measure
	Out of pocket cost	€ per training, trainee, learner segment
		Cost breakdown of spending personal L&D
	Dersonal hudget	budgets
	Personal budget	Types/categories of training followed
		% of budget spent
		% total expenditure L&D from budget versus %
	Allocation of cost	L&D expenditure outside budget (unallocated)
	Top 10 L&D cost	Allocation categories with highest cost
	Top 10 cost preferred/non-	Suppliers that used the largest part of the budget,
	preferred suppliers	are these preferred or not?
No-shows	Expenditure without result	Cost due to cancellations and no-shows
Impact	Result of L&D products	Learning evaluation outcomes

Table 27 External management information at department 5

Table 28 Internal management information at department 5

Internal MI
1a. Development subscription per training (date of subscription)
1a. Development subscriptions web based training
2a. Average number of subscriptions per employee
2b. Number of LMS users with a subscription
3. Development subscriptions per type of training
4. Top 10 training from catalogue supplied by external party
5. Top 10 training request outside catalogue
6. Suppliers: preferred/ non-preferred
7. Top 10 subscriptions non-preferred suppliers
8. Training with least number of subscriptions
9. Subscriptions per training type and employee age
10a. Top 10 best rated training (evaluation score)
10b. Top 5 least rated training (evaluation scores)

4.2.6 Management information at corporate L&D department 6

This department also makes a distinction between internal and external management information. In this separation the L&D department takes into account the different roles and responsibilities within the organization and the accompanying information needs. In this organization the higher management and business/L&D customer is more interested whether business results have been achieved and how L&D contributes to the strategy. L&D managers within this organization are more interested in how well (efficient and effective) the department is operating. The communicated external information in this department therefore contains a cost breakdown and strategy alignment with the business. The strategy alignment is communicated in a presentation in which the business (L&D customer) agrees with the L&D manager how much is going to be invested in L&D and for which purposes. Evaluation results form the core of the internal management information, used to manage the department and its vendors. During the interview no concrete information elements, like at the other companies, have been shared. The used information in this department was discussed on conceptual level during the interview, as done in this paragraph as well. The framework presented earlier in Figure 19 show how this department obtains information related to the development of L&D. In this framework each level of operation, both in business and L&D, are evaluated on their own Kirkpatrick level. Each level has its own specific information elements.

4.3 Analysing management information used in corporate L&D

All the management information elements shared during the interviews are presented in the previous section. In this section the information elements will be counted and clustered in order to identify the general used management information elements for corporate L&D (4.3.1). The clustering of the most occurring concepts shows what kind of information elements are commonly constructed, how the commonly used information elements are communicated and what information is used to manage the department (4.3.2). By the analysis of the used information elements an overview of commonly used information elements in corporate L&D can be constructed (4.3.3).

4.3.1 Most common used concepts

Many concepts are hidden within the information elements obtained from the interviews. These concepts could contain or direct to useful management information elements. To reveal the common concepts first 109 concepts were taken from the MI tables (Table 19 till Table 28) of L&D departments 1, 2, 4 and 5 (Appendix VII). Departments 3 and 6 have not shared concrete information elements during the interview, so it was not possible to include their information elements in this analysis. Within these tables was searched where these concepts were mentioned, and counted how often these concepts occurred and whether they occurred at more than one department. The frequency of concept occurrence and the number of departments at which the concepts occur are used as indicators for the acceptance of certain information elements. If the concepts occurred at more than one department it was also required to understand the context in which these concepts are used. For example the cost at department 1 can be defined and allocated differently than cost at department 5. The identification of concepts occurring at more than one department leads to three lists of concepts. The first list is presented in Table 29 and contains the concepts that occurred at two of the four departments. Table 30 incorporates the concepts that occurred at three of the four departments. Finally, Table 31 shows the concepts that occurred at all four departments.

#	Effectiveness	Learning management system [LMS]	Quarter/Quarterly/Q	Training type/ Type of training
Administration	Expenditure	Need(s)	Rate(s)/Rated	Unallocated
Breakdown	Function	Operation/Operating	Request	User
Business	Goal	Performance	Result(s)	Value
Delivery	HR survey	Program	Satisfaction	
Department	Impact	Project(s)	Target	Year
Development	L&D products	Purchased/Purchasing	Time	

Table 29 Concepts occurring in the management information at two of the L&D departments

Table 30 Concepts occurring at three of the L&D departments

%	Hours [hrs]	
Average	Number	
Budget	Product(s)	
Category	Quality	
Cost	Spend	
Efficiency/Efficient	Trainee	
External		

Table 31 Concepts occurring at four of the L&D departments

Evaluation
L&D
Learner(s)
Learning
Score(s)
Training

The identified concepts shown in the tables above are selected on their occurrence; whether they occurred in the management information of one or more departments. Another way to identify commonly used concepts is to count the number of total occurrences in all tables, the frequency. The determination of the frequency of occurrence has been done. The results showed that the most occurring concepts based on frequency, form a similar set of concepts as identified in the tables above. Therefore the number of times that a concept occurs in the different tables, the frequency, has not been further used as indicator of commonly used concepts.

4.3.2 Clustering of concepts

The loose concepts as presented in tables 29 till 31 show the most commonly used concepts in management information at the departments reviewed in this cross-case analysis. However, these concepts, presented outside their context, do not say much about the most common used management information elements. In order to determine the generally used information elements the concepts found in the previous paragraphs have been clustered as described in the upcoming sub-paragraph. This clustering results in an identification of the commonly used measures and metrics, how these information elements are obtained, how they are communicated and to which audiences they are most commonly communicated.

How the concepts have been clustered

In order to cluster the concepts the concepts of tables 29 till 31 first have been colour coded in a step-wise fashion (Table 32 Colour coded concepts of table 29shown in Table 32, Table 33and Table 34). The first step was to find which concepts fall in the cluster that should present what generally is being measured in L&D MI. That means that first the concepts related to what is being measured were marked purple. Looking at the concepts left-over a second possible cluster appeared: a financial concepts cluster, marked bright green. After identification of the first two clusters, some of the left over concepts form a third cluster: concepts related to the internal operations of an L&D

department. These concepts were marked brown. The occurrence of symbols like # and % formed the trigger to construct the fourth blue cluster, which includes concepts that say something about the scales of the measures and metrics and thus how the management information is commonly communicated. Some of the concepts that fall under this fourth cluster could also be labelled as management information audiences, which is therefore included as a fifth cluster. The concepts LMS and the HR survey form two sources for MI, and are seen as a sixth cluster. Then three concepts from the most commonly mentioned concepts were still not placed within a cluster. Of these three, evaluation was the most remarkable, as L&D and learning are quite obvious concepts given the research topic. Evaluation has been placed in the sources cluster, as it can be seen as an information source. However, the role that evaluation plays in L&D is, given what has been remarked during the interviews and the literature about it, quite large. The concept of evaluation is therefore coded as the seventh cluster.

1)What is being measured in L&D MI

2)Financial concepts in L&D MI

3)Internal operations L&D department

4)How the information elements are communicated (scales of measures and metrics)

5)Audiences

6)Sources of MI

7)Role of Evaluation in L&D MI

 Table 32 Colour coded concepts of table 29

#	Effectiveness	Learning management system [LMS]	Quarter/Quarterly/Q	Training type/ Type of training
Administration	Expenditure	Need(s)	Rate(s)/Rated	Unallocated
Breakdown	Function	Operation/Operating	Request	<mark>Us</mark> er
Business	Goal	Performance	Result(s)	Value
Delivery	HR survey	Program	Satisfaction	
<mark>Depar</mark> tment	Impact	Project(s)	Target	Year
Development	L&D products	Purchased/Purchasing	Time	

Table 33 Colour coded concepts of table 30

<mark>%</mark>	Hours [hrs]	
Average	Number	
Budget	Product(s)	
Category	Quality	
Co <mark>st</mark>	Spend	
Efficiency/Efficient		
<mark>Exte</mark> rnal	I rainee	

Table 34 Colour coded concepts of table 31

Evalu ation
L&D
Learner(s)
Learning
Score(s)

Seven clusters of concepts

The following seven clusters can be seen as the main result of the content analysis.

Cluster 1: What is being measured in L&D MI

Various things can be measured to construct L&D management information. The concepts of the first cluster reveal that Effectiveness, Impact, Performance, Satisfaction, Time, Quality, Cost and Efficiency are measured at least at more than one department.

Cluster 2: Financial concepts in L&D MI

Of what is being measures by MI the financial concepts: cost, spending, budget, and efficiency, form a second cluster. The existence of a financial cluster is strengthened by the fact that Table 29 contains concepts like: breakdown, expenditure, value, unallocated and purchased.

Cluster 3: Internal operations L&D department in L&D MI

Most of the interviewed L&D departments also communicate MI about the internal operation of the department and how effective and efficient it has been performed. This can be seen in the concepts like Product(s), (L&D) Request, Operation/Operating (L&D) Need(s), Project(s), L&D products, Development, Delivery and Administration.

Cluster 4: How the information elements are communicated in L&D MI; scales of measures and metrics

The largest group of coded concepts is formed by: the symbol #, Department, Function, Goal, Program, Quarter/Quarterly/Q, Rate(s)/Rated, Target, Time, Training type/ Type of training, User, Year, the symbol %, Average, Category, Hours [hrs], Number, Trainee, Learner(s), Score(s), Training. All these concepts say something about how the information elements are generally communicated: per type of training, in hours, in number of people, percentages, quarterly or yearly, average numbers, score values or relative to targets/goals. How the information is communicated differs due to various reasons per department, the concepts of this group together with the context of the MI tables, indicate some general ways.

If L&D departments want to use their MI for internal comparison or external benchmarking, they should be aware to use the same definitions for concepts, measures, metrics and timing. Hereby scalability also plays a role as an L&D department within a large organization will most likely have a higher budget than a relative small L&D department, and the budget spending over a week will be less than over a year.

Cluster 5: Audiences of L&D

Like the way of communication, also the audience to which the information is communicated differs per department. However, by the use of coding and the context provided by the MI tables, the following general L&D audiences are identified: the Business, the L&D and other departments, external parties (vendors), and Trainee/Learner(s)/Users.

Cluster 6: Sources of L&D MI

The coding of counted concepts reveals two sources of potential MI used by at least two the departments: the HR survey and the Learning Management System. Later, the concept evaluation is also included in this cluster as a possible source for MI.

Cluster7: Role of Evaluation in L&D MI

The fact that evaluation is named at all four L&D departments says something about the role it plays in L&D MI. Apparently (training) evaluation data is used to construct at least some of the information elements. It underpins the important role of evaluation in assessing the value of training and managing the L&D department.

Clustering the left-over concepts

Since each L&D department operates in a different environment, the context of the identified concepts differs. As a result some information elements, or concepts, can be found at multiple L&D departments but due to different definitions they were not always identified using the word count and clustering techniques. For instance ROI, and the symbols \in and \$ fall under the financial concepts. Another example is formed by the concepts vendor and supplier, both only mentioned at one department, but it is possible to cluster them with purchasing and external. In Appendix VII all counted concepts, including the concepts is presented between brackets. This text between brackets in the appendix gives a hint about how these concepts could have be clustered.

4.3.3 Conclusion of the analysis

The goal of the concept analysis was to obtain insight in how other L&D departments evaluate the value of their corporate L&D activities and on which information they manage the department. From the concept analysis the following can be concluded:

In the management information about corporate L&D generally financial measures and metrics are included. Also the performance of the internal operation is often assessed, using the various elements of information derived from the practice of training evaluation. Most commonly measured are concepts like Quality, Efficiency, Effectiveness, Cost, Time, Impact, Performance and Satisfaction. The HR survey, the Learning Management System and Evaluation results are potential data sources to construct the information elements. Since every L&D department operates in its own environment and with its own specific people and technologies the way of communicating and calculating measures and metrics differs per department and audience. The L&D department, its customers (business and learners) and the suppliers can be seen as the major categories of occurring audiences.

The concepts brought together in cluster 1 can be used to obtain insight in the most commonly used high-level information elements: Effectiveness, Impact, Performance, Satisfaction, Time, Quality, Cost and Efficiency. For each concept of the cluster the related lower level information elements are obtained from tables 19 till 28. and presented in Table 35. However, due to the various definitions of the high-level elements in use at the interviewed L&D departments, some concepts like quality, efficiency, cost and effectiveness have multiple and diverse related lower level information elements. Moreover, the information element number of provided learning hours over cost is even related on a higher level to both cost and efficiency. Cost has only four related information elements are likely to be commonly used. All in all, the concepts of cluster 1 lead to a diverse list of lower level information elements. However, it seems that an underlying structure/categorization for these lower information elements is lacking.

Table 35	Information	elements	identified	by th	e hottom-un	annroach
Table 35	Inormation	elements	luentineu	Dy LIP	e bottom-up	approach

Concept of cluster 1: high level information element	Related lower level information elements		
	Program quality, based on evaluation score		
Effectiveness	Impact, based on evaluation score		
	Provided hours of training		
Impact	Program impact on: capability, performance, organization, based on evaluation scores		
	L&D departments impact of learning culture		
Performance	Result of L&D on organizational performance		
renormance	Performance of L&D supplier		
	Satisfaction with offered L&D products		
Satisfaction	Learners satisfaction score about the quality of the		
	program		
Time	Project time, time to develop products		
	Time spent on learning per employee		
Quality	Quality of L&D products		
	HR score L&D satisfaction		
	Non-productivity cost		
Cost			
	Out of pocket cost		
	#provided learning hours/cost		
	Use of hudget: No-shows, occupancy, number of		
	cancellations		
Efficiency	Non-productivity of learners		
,	Billable hours L&D department		
	Purchasing advantage		
	Support functions/L&D functions		

4.4 Support for the maturity model in practice

The main goal of the interviews was to find out which information elements are used in practice at other L&D departments. These findings have been presented in the previous sections. Due to the relative unstructured method used to conduct the interviews, the representatives not only shared which management information elements they use, but as a side result most of them also shared the reasons to construct and use management information. These reasons and usages fit with the four stages of the maturity model as discussed in 2.2.4, so the L&D departments can be positioned at the various stages (4.4.1). In this way the interviews are not only useful in determining the commonly used information elements, but the findings of the interviews also provide some support for the existence of the maturity stages in practice and show the consequences for an L&D department that finds itself at a certain position. Since the maturity of data and information use is related to the value created by the information, it is interesting for KBC to know where it is positioned compared to others. The interviewed representatives also shared which future struggles can be expected if an L&D department desires to become more mature (4.4.2).

4.4.1 Positions of the cross-case departments on the maturity model

With respect to the use of L&D management information, each of the organizations can be plotted along the stages (Figure 26). Department 1 can be found at stage one as it claims to deliver operational reports in a reactive way. On the opposite direction department 3 can be found at stage four, as it claims to use L&D data for predictive analysis. It was remarkable to see that at each stage the L&D departments struggle with different kinds of organizational and operational questions and problems.



Figure 26 Stage positions of the L&D departments within the maturity framework, based on the interviews and observation at KBC

Departments located at stages one and two (1,5 and 2) (reactive and pro-active reporting) seem to struggle with the technology and the skills needed to implement and operate a management information system. The technological struggles include gaps in the data, as for instance certain data is not collected, missing links between the various data sources, or the lack of a standardized format for data collection. Problems with data ultimately result in a lower relevancy and accuracy of the constructed management information. In sum, for departments at stages one and two providing and using management information often feels as a hard and time-consuming exercise.

Departments located at stages three and four (4,6 and 3) (strategic and predictive analytics) claim to have the people and technology needed to collect and use the data correctly. Department 3 can be positioned at stage four since this specific L&D department is able, with the help of technology, to generate all kinds of reports, figures, and tables and to perform predictive analytics. Also various company data sources are linked and can be accessed to performance predictive analytics. However, as mentioned under 4.2.3, department 3 is dealing with some struggles like un-actionable correlations and disinterested audiences. Therefore, even with a good information system and a high maturity stage, the L&D department is still working on the determination of its desired management information elements and how the information should be used.

4.4.2 Position of KBC on the maturity model

Also KBC's position in the maturity model can be determined by assessing which information is currently obtained and how this information is reported and used. At KBC currently three management information reports are structurally obtained. These are the Learning Summaries, the Corporate Social Responsibility [CSR] reports and the reports constructed for the Centraal Bureau voor de Statistiek [CBS]. The CSR and CBS reports are examples of reports that are externally communicated, reactively on the information requests of others. The Learning Summaries contain management information which is proactively obtained for internal use. Other than the CSR and CBS reports not much management information is obtained and externally communicated in a structured fashion. A lack of technology combined with the time and effort required to construct a reliable set of information can be seen as the main cause.

Where externally KBC reports reactively, internally already more forms of proactive reporting can be found. An example is the obtained evaluation results, which are proactively being sent to the involved stakeholders. However, the department is currently still seeking how to interpret and use this information in order to enhance their performance. Another form of internal information, on the progress of internal processes and projects, is usually proactively reported by the employees to the general manager.

However, this reporting is not taking place in a standardized and structured manner other than during the weekly kick-off. Based on its reporting and use of information KBC has a position quite similar to that of company number five: on the edge of stages 1 and 2 (Figure 26). This position is also due to the absence of both strategic and predictive analytics. Its current position implies that the department can still grow in its use of information.

Altogether, the interview findings suggest that L&D organizations operate at different stages of the maturity model. Where a higher stage is related to a more valuable use of information, the interviewees suggest that a higher maturity stage does not automatically resolve all organizational struggles and questions in relation to management information and its use. Once an organization decides aim for a higher stage on the model it should be aware that while the (technological and skills) problems faced at the lower stages will fade out and more efficient satisfaction of the information needs will become possible, new organizational problems and questions, like at department 3, will rise at the higher stages. This finding stresses the importance of first identifying the desired and useful information, as done in this research, before a management information system as a technology is implemented. If an L&D department would just implement the technology in order to rise along the maturity stages, the information systems could end up generating all kinds of "useless" information. This would make the system less effective and efficient in its role as a support tool.

4.5 Five management information prototypes based on the other corporate learning and development departments

The results of the interviews as presented in the previous sections show the management information elements of the interviewed corporate L&D departments. However, to conduct the concept analysis these information elements were detached from their original context and media in which they are presented and communicated during the interviews. In this way the tables containing the information do not show how the data is obtained, how the information elements are constructed and how the information is communicated. The context in which management information is communicated does have an influence on how the information is perceived and used by its audiences. If data is obtained yearly, one can only add information to the decision making process yearly. If data is continuously obtained it could be possible to directly steer the operation.

This section shows the contexts in which the earlier described management information elements reside. Hereby insight is obtained in how (parts of) the information systems are working at the other departments, and how the measures and metrics are constructed and communicated. The depiction of the context allows the construction of five prototypes (4.5.1 till 4.5.5). These prototypes, based on the management information of the interviewed departments, show how L&D departments could organize, communicate and present their management information. The prototypes can serve as a source for inspiration but also as means to evaluate during the development of the information system and obtain feedback both on the desired information elements and on the way of communication/presentation of these elements. The prototypes as discussed in the upcoming paragraphs can help KBC and other L&D departments in the development of their management information (system).

4.5.1 Prototype 1: Management information in A3 Dashboard

The layout of this A3 dashboard prototype can be found in Figure 27. This prototype is based on the management information scorecard used at department 1. The information in the dashboard is updated quarterly with the progress results. At department 1's organization the dashboard is shared with other L&D departments worldwide, in order to compare the results. The information incorporated in the A3 is shared with the higher HR management as well. The real dashboard obtained during the interview includes the information elements as presented in Table 19. However, the information elements in the

	КВ	C Le	earnin	g and D	evelopn	nent
Efficiency- Op	erating st	atisti	ics			
YTD (year to date)	FY 15	FY:	14	Change %	KLM Ave	rage
Total Training Investment (€ 000's)	€ 625	; €	644	-3%	n.a.	
Development	€ 510)€	490	4%	n.a.	
Delivery	€ 15	; €	17	-12%	n.a.	
L&D administration	€ 45	; €	77	-42%	n.a.	
External	€ 45	; €	40	13%	n.a.	
Not allocated	€ 10)€	20	-50%	n.a.	
Average Investment per learner	€ 977	′€	816	20%	€	500
investment total revenue	1.679	% n.a	э.	n.a.		
Total investment CILA	149	6	13%	1%		
Total investment MEGI	169	6	17%	-1%		
Total investment Europe and North Africa	389	6	33%	5%		
Total investment Asia Passific	129	6	12%	0%		
Total investment North America	109	6	15%	-5%		
Total investmnet Africa	109	6	10%	0%		
Efficiency L	earning ho	ours				
LTM (last twelve months)	FY 15	FY:	14	Change %	KLM Ave	rage
Total training hours	40	0	330	21%		
In class	30	0	300	0%		
Technology based learning [TBL]	10	0	30	233%		
Learning hours per region						
Learning hours CILA	6	0	50	20%		
Learning hours MEGI	5	6	41	37%		
Learning hours Europe and North Africa	8	8	78	13%		
Learning hours Asia Passific	4	2	42	0%		
Learning hours North America	6	5	45	44%		
Leaning nours north interiou		9	74	20%		
Learning hours Africa	8	_				
Learning hours Africa	8					
Learning hours Africa	8					
General Comments	8					
General Comments	8					
General Comments	8					
Learning hours Africa General Comments	8					
General Comments	8					

prototype are translated to the context of KBC. The numbers presented in the figure are fictional.

Figure 27 Visualization of prototype 1

Various information elements are incorporated in prototype 1. First there are the financial efficiency metrics in the form of cost and investment allocations related to L&D activities. Then there are efficiency metrics that show the allocation of learning hours over the different markets. On the right side of the scorecard the progress towards *technology based learning* goals can be found above the effectiveness metrics of learning based on training evaluation. Finally, the results of global survey about learning are incorporated in the prototype. The information elements like *technology based learning* or the cost allocation per region are at department 1 based on the agreed goals between business and L&D, the global learning strategy, and the learning goals agreed with the business. The data depicted in the dashboard is obtained from financial data, the LMS, training evaluation results, and the global HR survey.

4.5.2 Prototype 2: Management Information presentation

At department 2 a yearly PowerPoint presentation is the media used to communicate the strategy of the L&D department and the accompanying KPIs to the major stakeholders like business managers in L&D. The separate information elements are also communicated to the responsible stakeholders involved in L&D development and delivery. In the presentation the elements are compared to the yearly set targets. The visualization of this presentation, translated with fictional numbers to the context of KBC, can be found in Appendix VIII due to the relative large size of the figures. The included information elements are the same as the ones presented in Table 20 Table 24. This implies that the information elements are characterized by the various functions within the L&D departments and that many measures and metrics about the internal performance and processes of L&D are included in the prototype. The data presented at department 2 is obtained from the LMS, the financial data, internal process data and training evaluation data.

4.5.3 Prototype 3: Management Information sandbox

The third prototype is a conceptual description of a management information sandbox, based on the information system seen at department 3. As said this department has no standardized reports, presentations or dashboards. Instead it uses its management information tool as presented in Figure 25, which allows construction of almost any desired information element, based on what is required by the various stakeholders. The tool also allows analysts to link various data and conduct analyses. If the tool of department 3 could be implemented at other L&D departments it would allow these departments to communicate any desired piece of information, in any desired form at any desired time, adapted to the information needs and the context best fitting the audience. Implementation of such a tool requires an L&D department and other departments of an organization, to structurally gather a relative large amount of data e.g. internal process data, HR data, and training evaluation data. This data needs to be stored in various databases like the LMS and financial databases. On their part these databases/data sources need to be in place, linked and up-to-date.

4.5.4 Prototype 4: Yearly L&D Management Information document

During the interviews the representative of department 5 shared the base for the fourth prototype. To construct its internal management information the department hires its LMS provider. In collaboration they construct a booklet-like document presenting the information needed to manage the department based on the data stored in the LMS. This information is shared with the main stakeholders involved in L&D. In the booklet thirteen main headers can be found. Under each of the headers the specific information elements are discussed, visualized and remarks and suggestions about the presented data are given. The headers suggested for the prototype information elements in the department are comparable to the ones presented in Table 28. It would require too much space to visualize every header and make the prototype completely tangible. Based on the internal MI seen at department 5 Figure 28 and Figure 29 show two examples, with fictive numbers, of what pages within a yearly management information document could look like. Per header the information can be adapted and the way of data presentation can be altered. The specific information contents and lay-out of the document can be tailor-made, fitting the needs and requirements of KBC or another L&D department.

Development enrolments per training



Explanation:

In the graph we see the number of new enrollments derived from the LMS per type of training

Remarkable:

-In the graph we see that most enrollments are for sales training, despite the fact that our goal is to promote communication training.

- During the summer we see a fall in the number of enrollments. This is most likely caused by the summer holidays.

Suggestion for action:

-Since the total number of enrollments for sales communication training is currently not at the desired level we should present this product better in the market.

Figure 28 Visualization of Development enrolments per training of prototype 4

То	n 10	enro	Iments	non-	nrefe	rred	sunn	liers
IU	р то	CIIU			וסוסוע	leu	Supp	

Training	Supplier	Enrolments	Cost (€)
1) Sales	Baarle en co	215	14.000
2) Communicatie	Winso	198	11.000
3) Leiderschap	Haaks trainingen	176	10.000
4) Business Writing	Baarle en co	174	15.000
5) Mindfullness	Mindess	168	22.000
6) Effectief communiceren	BlaBla opleidingen	123	9.000
7) Team ontwikkeling	Janssen	88	5.000
8) Word	Microsoft	68	4.500
9) BHV voor beginners	Safety enzo	35	2.000
10) Presenteren	Presentso	20	3.500

Explanation:

In the table we see the top 10 L&D products based on the number of enrollments. These products are delivered by non-preferred suppliers

Remarkable:

-Despite the fact we have a preferred supplier for mindfulness, this year 168 customers enrolled in the more expensive training of Mindess.

Suggestion for action:

-The preferred supplier for mindfulness, which is cheaper, has only had 45 enrollments. We should find out how this difference occurred, since L&D budget spending could have been lower if customers had chosen our preferred supplier.

Figure 29 Visualization of Top 10 enrolments non-preferred of prototype 4

4.5.5 Prototype 5: Management Information based on strategy

The fifth and final prototype has been constructed based on the interview with department 6. During the interview this department shared that it basically identifies and translates the business strategy and corporate learning needs into a learning strategy and L&D products. Where the strategy is constructed internally in collaboration with the line managers, the L&D products are mostly designed and delivered in close collaboration with external parties. Most of the "L&D work" of development and design is outsourced. This way of how the L&D department operates affects the communicated information. During the interview the L&D manager described his way of communicating management information towards the business as presented with fictive numbers in Table 36. Basically, the L&D manager makes yearly agreements on his L&D goals and operational targets, which are derived from the business needs and strategy. Later he communicates how well he has achieved these goals.

Table 36 Visualization of prototype 5

Business goal	Audience and needed competences	L&D solution	Performed?
More sales in Africa [increase in revenue]	Sales reps. in Africa lack common sales skills	Sales training for African Sales reps.	 80% of predetermined target group has followed training and passed the test Sales growth 4%
More sales in America [increase in revenue]	Sales reps. in America lack best practice sharing platform	Develop a platform for best practice sharing	 100% of the American sales reps have an account for the platform daily 7 best practices are shared Sales growth 5%
Managers should function as the role models for our employees. [Increase in employee satisfaction score HR survey about management]	Worldwide, Level 3 managers lack coaching skills	Coaching training for level 3 managers	 100% of the American managers have followed the course 2pnt increase on management satisfaction score in HR survey 60% of the African managers have followed the course 1.5 pnt increase on management satisfaction score in HR survey 20% of the European managers have followed the course no increase on management satisfaction score in HR survey

4.6 Summarizing conclusion

The goal of the cross-case analysis was to obtain insight in the generally used management information (systems) at corporate L&D departments. For this purpose six representatives of departments have been interviewed. During these interviews most of these representatives shared how they use MI in their daily operation and which information elements they communicate. Concept analysis and clustering leads to seven clusters of concepts for corporate L&D management information. One of these clusters indicates the generally communicated and used high-level information elements like time, cost, efficiency and effectiveness. Due to different definitions the lower level indicators like Quality of L&D products, Satisfaction with offered L&D products and Non-productivity of learners are less structured. Financial data and training evaluation data are two main categories of information elements. The clustering also showed that HR surveys and LMS are used to obtain the desired information and that the L&D department, its customers (business and learners) and the suppliers can be seen as the major categories of occurring audiences.

The identified information elements can be seen as the primary result of the bottom-up approach. Besides these elements the interviews form the base of some secondary outcomes. First there is support for the existence of the stages of the maturity model, as the different departments can be related to these stages. The five prototypes are the other secondary outcome of the interviews. These prototypes can later in the development process be used to communicate the desired information elements. In this way the prototypes are used as a tool to test and obtain feedback in order to find the best way for communication of the desired information.

Where this chapter used the bottom-up approach the upcoming chapter will use a topdown approach to derive information elements. Due to the top-down approach the information elements will be based on the core processes and strategies of KBC. Since the top-down approach can be seen as a structured way to derive elements, it is likely that the obtained elements in the next chapter will be less ambiguous and easier to structure and categorize than the element obtained indentified by the bottom-up approach.

5 Deriving corporate L&D management information elements from the top-down

The previous chapter used a cross-case analysis to derive management information elements from the bottom up. As discussed in chapter 2 sole use of a bottom-up approach to determine information elements can be dangerous since a connection between the organization's specific environment and the selected information elements might lack. As a result the L&D department might select irrelevant indicators given its environment, characterized by company specific factors like strategies, processes, roles and tasks. In order to ensure that the information elements align with the specific environment and are viable and feasible, they could be derived using a top-down approach. In order to derive information elements from the top down various approaches have been developed. As presented in chapter 2, these approaches have in common to start on the strategy level and end, via the (core) processes, on the information element level, i.e. measures and metrics.

As stated in chapter 3, in which the operation of a corporate L&D department has been described, this chapter will provide an answer to the remaining part of the sub-question: "How does a corporate learning and development department operate and what information elements can be derived from the operation?". In order to derive the information elements a top-down approach will be used. To use the top-down approach first a point-of-view [POV] has to be formulated. The POV helps to demarcate for which desired audiences the information elements will be determined, since each audience has different information needs and desires different information elements (5.1). To conduct the top-down approach the questions and framework of the Balanced Score Card [BSC], developed by Kaplan & Norton (2007), have been selected. In order to derive information elements the BSC starts at the strategy and vision, from which measures and metrics are deducted taking the multidimensional conceptualization of performance into account. This multidimensional conceptualization is captured by the four perspectives of the BSC: financial, customer, learning and growth, and internal business processes (5.2). The topdown approach results in a variety of management information elements, categorized by the four perspectives of the BSC (5.3 till 5.6). From the variety of management information elements selected group can be categorized as initially desired (5.7).

5.1 Define point of view

The first step in deriving measures and metrics is to define a point-of-view. This POV is composed of a user, his needs, and an obtained insight. The POV helps in delimiting the initial desired audience for which the information elements will be derived. Since each audience requires its own types and granularity of information inclusion of all audiences in a POV would most likely have too large a set of initial desired information elements as a result. For derivation of the information elements the POV is framed as: Managers involved in the corporate L&D and the business environment, need a Management Information System and accompanying information elements in order to manage their business and improve the performance of their organization.

The POV as described above sees the "management group" involved in L&D and the business as the user. The Commercial EVPs, the manager KLM Human Resources and the General Manager of KBC are, in this research, seen as this management group. The POV thereby excludes users and thus audiences like the L&D product developers and designers, trainers, and learning consultants. As explained above, these potential users have been excluded in order to delimit the initial desired set of information elements. Later in the development process of the information system it is still possible to derive information elements for other users and audiences.

The POV has been translated into the following question: *What information does a manager need in order to manage the corporate L&D department as a business?* Note that the question is not to be seen as a substitute for the research question. The question

is constructed to derive the measures and metrics from the top down, as the answer to the question indicates information elements that are desired and viable. The business part has been added since it links the systems perspective on L&D, which sees the L&D department/KBC as a separate business entity, with the information elements.

5.2 Using the Balanced Score Card to derive information elements

In practice managers quite often use the BSC to determine their management information. In the upcoming sections the BSC (Appendix I) will be used to derive the information elements for KBC as a corporate L&D department. Basically it means that the first two columns (objectives and measures) of the four balanced score card sections are filled. Later in the development process the other two columns (targets and initiatives) could be determined, once the initial objectives and desired information elements are evaluated with the various managers.

As mentioned in the introduction of this chapter, the BSC has been selected since its purpose is to derive the information elements from the top down, while taking the multidimensional conceptualization of performance and the required balancing of measures into account. The starting point of the BSC, like any top-down approach, is the vision and strategy of an organization. From this vision and strategy objectives are to be determined, based on the answers to the following four questions:

-To succeed financially how should we appear to our shareholders?

-To achieve our vision, how should we appear to our customers?

-To achieve our vision, how will we sustain our ability to change and improve?

-To satisfy our shareholders and customers, which business processes should we excel at? (Kaplan & Norton, 2007).

Based on the objectives, measures can be deducted which should monitor the current state or progress towards the objectives. In order to set objectives and determine measures that fit the operations and environment of KBC, the top-down approach has been done in collaboration with the general manager. During the derivation of information elements, the measures obtained during the cross-case analysis have been used as a source for inspiration. The upcoming sections (5.3 till 5.6) each present the steps taken for, and the results of, translating the strategy and vision, determining the objectives and deducting the accompanying main and other measures for the four sections of the scorecard.

5.3 Financial objectives and measures

The first section of the BSC encompasses the financial objectives and measures. In order to succeed financially, and receive its monetary resources, KBC should appear financially healthy to its shareholders; those who invest in the department and assign the financial resources. Making profit, one of the most common objectives of any business, would be a relatively strange objective for a healthy financial appearance of an internal operating department, since it would imply that AFKL is paying more for L&D than necessary compared to the cost of KBC. For this reason it is decided to use the Total Cost of Ownership [TCO], instead of profit, to assess the financial position of the L&D department (5.3.1). The TCO is defined as all the yearly costs, direct and indirect, required to operate the L&D department and provide the L&D products to the market (5.3.2). In order to construct the TCO an allocation key/cost breakdown will have to be defined (5.3.3).

5.3.1 Financial objectives

The objective of KBC is to lower the total cost of ownership. However, a sole focus on cost reduction could lead to situations where for instance the quality and the impact of an L&D product become subordinate to the cost. Therefore the objective of lowering the TCO

will have to be balanced with the impact of the L&D products and services. In this way a manager should be able to monitor whether a cost reduction has been achieved, without a reduction in impact of the products and/or services. The objective could also be to create more impact with the same cost. The objective to lower the TCO aligns with both the overall KLM objective to reduce cost, the commercial division's objective to "make the budget" and KBC's strategic objective to be more cost effective.

5.3.2 Main financial measures

The TCO is chosen as the main financial measure to monitor the objective of cost reduction. As said, the TCO is defined as all the yearly costs, direct and indirect, required to operate the L&D department and provide the L&D products to the market. For the impact, used as a balance measure, the evaluation scores on the various levels of the evaluation model can be used. More on the precise measurement of impact will be discussed under *customer objectives and measures*.

5.3.3 Other financial measures

During the session with the general manager the measures and metrics as presented in Table 37 were identified as desired to be constructed for KBC. The TCO provides an overview of all cost related to KBC. However, in order to be able to make financial decisions it is desired to have more detailed information on the costs. This could be achieved by the establishment of an "allocation key" or a cost breakdown. The desired financial measures included in Table 37 give an indication of how the costs can be broken down. Besides the possible TCO breakdown Table 37 also includes the non-productivity cost of learners due to L&D (once in training an employee can often not perform its job, this often causes additional cost for the organization) and the costs due to no shows, cancelations and re-planning, cost made by the L&D department but caused by its customer.

Table 37 Other desired financial measures

	-Salary expenses KBC
	-Out of pocket cost L&D, amount of money spent on L&D
	which is not internally charged (leaving the organization)
	-Expense claim L&D department; amount L&D cost which
Possible breakdown for TCO	can be internally charged (opposite of out of pocket cost,
	this money is not leaving the organization)
	-Cost to facilitate L&D: travel and hotel expenses, cost of
	classrooms/locations
	-Unallocated learning cost /other L&D expenses not booked
	on KBC
	-L&D investment per employee/per area
Operational cost	-Non-productivity cost of learners due to L&D
Operational cost	-Cost of no shows, cancelations and re-planning

5.4 Customer objectives and measures

The second section of the BSC includes the costumer objectives and measures. The customer of KBC is identified to appear on three levels: high-level managers, supervisors/line managers and employees. For its customers KBC envisions to be an important business support partner, a supporter of change and a supporter for professional growth. In the short-term strategy these vision elements can be related to the concepts of *more accessible, more empowering* and *more impact*. The products and services that KBC wants to deliver should become more and more custom made and should fit the L&D needs of the individuals (5.4.1). The main measures to monitor these objectives are the impact of the provided learning products and the customer satisfaction with these products (5.4.2). Measures and metrics on manager support, time to competence and training effect have been identified as desired other measures (5.4.3).

5.4.1 Customer objectives

The main objective of KBC as L&D department is to provide impactful and valuable L&D products and services for its customers and to continuously improve this impact and value. In relation to the commercial division, KBC wants to support the development of the knowledge, skills and competences needed to be a professional sales team and contribute to the individual flexibility, needed in the current sales environment. This latter statement aligns with KLM's vision to encourage employees to expand their skills and experience through training and changing jobs from time to time.

5.4.2 Main customer measures

Table 38 contains the main customer objectives and measures. To evaluate the impact of the L&D products levels 3 and 4 of Kirkpatrick's evaluation model could be used. Currently KBC already uses the earlier presented questionnaire to measure these levels, so these scores could be used. The three other main measures presented in the table: valuable products, net promotor score and customer satisfaction score, are currently not being measured at KBC and therefore require definitions as described in the upcoming sub-paragraphs.

Objective	Measure
Provide impactful products and services	- Impact : the evaluation scores on the four levels of the evaluation framework plus the ROI as currently determined in the evaluation questionnaire (not monetary value).
	-Long term impact: measured after three months, defined as the level 4 score, impact, of the current evaluation.
Provide valuable products	-Valuable products: alignment of the intervention/L&D goals with the business goals. This is currently not measured and is hard to translate in a single measure. Suggested is to measure it like prototype 5 or with Brinkerhoff's success case method.
Make customers satisfied and KBC a preferred supplier of L&D. KBC as important business support partner	-Net Promotor Score [NPS]: identifying the customer loyalty of KBC's customers. NPS is currently not measured and would therefore first require a definition. -Customer satisfaction score: about collaboration with KBC and the provided services. Such a score is currently not measured and would therefore require a definition, for instance the questions currently by Poichbold

Table 38 Customer objectives and main measures

Impact of products

As discussed under the evaluation of training in chapter 3, various models methods and theories exist to evaluate the impact of training. Currently KBC uses its standard questionnaire to evaluate its products on the four levels of Kirkpatrick. In order to evaluate training impact against business criteria Bramley and Kitson (1994) argue that all four levels should be measured, since each level provides another kind of evidence.

The first two levels can, according to the authors, be measured by using well defined questions which measure the reaction of the learner (level 1) and whether learning goals have been achieved (level 2). The difficult part according to Bramley and Kitson (1994) is to evaluate levels 3 and 4 in a proper fashion. To properly asses levels 3 and 4 they

suggest to first of all use the *Increased Effectiveness Model of Training* (Figure 30) instead of the commonly used *Individual Training Model* during the development and design of the L&D products (Figure 31).



Training, source: (Bramley & Kitson, 1994)

Figure 31 Individual training model, source: (Bramley & Kitson, 1994)

According to the authors the main advantage of the *Increased Effectiveness Model* is that during the development and design process the evaluation criteria can already be determined that assess whether L&D products delivered the desired impact, even in a quantitative fashion if desired. This makes it easier to monitor and manage what the customer defines as the desired impact of an L&D intervention.

Valuable products

The assessment of the objective to deliver valuable products could be done as seen during the interview at company 6 and visualized in prototype 5. This department evaluates the value of the L&D products they deliver mainly by how well the L&D goals align with the business needs and objectives. However, obtaining measures like suggested in prototype 5 requires for each L&D product that during the intake process learning objectives are related to the wider organizational strategic objectives. It also requires agreement between the L&D department and its customers, per product, where and how it contributes to the organization, and how this contribution will be quantified.

An ROI study, as suggested by Phillips, could be used to assess the monetary value brought by the L&D department. However, the exertion to isolate the causal effects of training into cost and benefits and assign monetary values is generally seen as hard and time consuming in the L&D environment. Some managers of the interviewed L&D departments even say it is irrelevant to evaluate the monetary benefits of L&D. They argue that if the L&D department can align L&D products and services with the business needs, already enough proof for the value of these products and service is given. Moreover, these managers argue that not every contribution of L&D can be expressed as a monetary quantity making an ROI irrelevant.

Brinkerhoff's success case method could be helpful as a third possible method to evaluate whether products were valuable. His method, as described in chapter 3, often leads to both qualitative measures and quantitative measures. The success stories that are constructed for the success case method can help to understand, assess and communicate the value brought by L&D products.

Net Promotor Score and Customer satisfaction score

The Net Promotor Score [NPS] is generally claimed to be a good measure for how customers see the performance of a certain company. By asking the question "*How likely is it that you would recommend this company to a friend or colleague?*" on a scale from 0 to 10 three groups of customers are distinguished. Those who rate the question from 0-6 are seen as detractors; unhappy customers who can damage a brand and impede growth through negative word-of-mouth. Those who give a rating of 7 our 8 are seen as passives; these are satisfied but unenthusiastic customers who are vulnerable to competitive offerings. Those who give a rating of 9 or 10 are seen as promoters; these

are loyal enthusiasts who will keep buying the products at the corporate L&D department and refer others within the organization (Reichheld, 2003).

During this research the NPS has not been seen used in the context of corporate L&D. However, the ideas behind the NPS and the underlying questions have the potential to be valuable in tapping the customer satisfaction in the L&D context. The following questions are identified by Reichheld as the "right questions" which could be asked at KBC in future customer surveys to tap customer loyalty and satisfaction:

- How strongly do you agree that KBC deserves your loyalty?
- How likely is it that you will continue to purchase products/services from KBC?
- How strongly do you agree that KBC makes it easy for you to do business with?
- If you were selecting a similar provider for the first time, how likely is it that you would you choose KBC?
- How strongly do you agree that KBC creates innovative solutions that make your life/work easier?
- How satisfied are you with KBC's overall performance? (Reichheld, 2003)

5.4.3 Other customer measures

During the session with the general manager the measures as presented in Table 39 were indicated as desired additional customer measures besides the earlier identified main measures. Also in these "other customer measures" not everything is currently measured nor defined for KBC and therefore described in the upcoming sub-paragraphs.

Possible breakdown customer satisfaction score

First there is a possible breakdown for the customer satisfaction score. In order to get quantifiable measures, evaluation questions could be added to the current questionnaire. These questions could for instance ask how satisfied customers are with the collaboration with TCC, the learning consultants or the developers and designers.

Time to competence

Time to competence is a measure which could be used to see how fast employees are ready to perform their job, related to the knowledge and skills provided and trained by KBC. The shorter this time, the earlier an employee could perform his job.

Managerial support

Managerial support is identified as a desired measure since it is found to be important factor in the learner's satisfaction and the impact of training. To tap the managerial support the already existing survey questions: "*My manager and I set expectations for this learning prior to attending this program."* and "*After this program, my manager and I will discuss how I will use the learning on my job"* could be used.

The effect of training

To assess the effect of mandatory training and knowledge building, a pass rate could be used. For L&D products that focus on competence and skill development, which can often not be tested using a single exam, pre-defined aptitude tests or other quantifiable evaluation criteria could be developed per learning product. Most of the L&D products offered by KBC are of this latter category and aptitude tests would have to be developed as these are currently not used.

Table 39 Other desired customer measures

Dessible breakdown for	-Likely to recommend KBC/its programs to peers and other colleagues			
Possible breakdown for	-Quality/satisfaction collaboration with TCC (support			
customer satisfaction score	function)			
	-Information availability and communication			
	-The time required to teach a (new) employee the			
Time to competence	competences knowledge and skills before he/she can			
	perform the job.			
	Based on standard evaluation questions:			
	• My manager and I set expectations for this learning			
Manager support	prior to attending this program.			
	• After this program, my manager and I will discuss			
	how I will use the learning on my job.			
The offect of training	-Pass rate for mandatory training/knowledge building			
The effect of training	-Aptitude-test results for skill and competence building			

5.5 Learning and growth objectives and measures

The learning and growth objectives, the third section of the BSC, can be divided in objectives for the wider organization (5.5.1) and objectives for the internal organization of the L&D department (5.5.2). It is important to put forward that the organizational objectives about learning growth should be composed in close collaboration with other managers: HR manager, EVPs, line managers and L&D managers, rather than to let them be solely constructed by KBC as presented below. The learning and growth objectives and measures presented hereafter are derived for KBC's point of view. In its vision and strategy KBC mainly describes how it wants to contribute to the learning and growth of the employees in the wider organization as a corporate L&D department. The staff survey score, the manager support for L&D and the alignment score have been identified as the main measures to assess the learning and growth objectives (5.5.3). Mobility of employees, manager quality, team performance and support for the learning culture are identified as the other desired information elements about learning and growth (5.5.4).

5.5.1 Learning and growth objectives for the wider organization

In order to support the organization's ability to change and improve, which are desired competences from KLM's vision, KBC wants to contribute to the overall learning culture within AFKL. It also strives to deliver the products required to achieve the business objectives. Preferably these products are in line with the vision and strategy of the commercial division on terms like: *move fast* (deliver quickly), *sales as a profession, be the best team* and "*from knowledge to cash*" (the belief that proper sales training can lead to more revenue). Within the commercial division KBC has the ambition to contribute to the team capabilities, employability and mobility of the employees and it strives to serve as a best practice example in these fields for the other divisions. As discussed in *The market of a corporate L&D department* in chapter 3, managerial support is one of the crucial variables in the outcomes of L&D activities. Therefore one of the ambitions of KBC is to contribute to the quality and professionalism of employees in the middle management layers of the commercial division, at least by making them aware of their influence in the success of L&D and the success of the organization as a whole.

5.5.2 Learning and growth objectives for the internal organization

Most of KBC's internal objectives in learning and growth are formulated in personal development plans which are determined and evaluated annually. It would be irrelevant to include these personal plans in this thesis. In general it can be said that KBC strives to empower its employees and to provide them the skills and competences needed to perform their job.

5.5.3 Main learning and growth measures

The objectives and measures presented in Table 40 and in the upcoming sub-paragraphs are based on the wider organizational objectives presented in the previous paragraphs.

Possibility to enhance skills knowledge and competences

The results of the yearly staff survey scores on satisfaction about L&D opportunities can be a good measure to tap how satisfied employees are with the available learning and growth possibilities at AFKL, within the commercial division and within KBC.

Managerial support for learning and growth

The managerial support in learning and growth, which is seen by KBC as a measure for managerial professionalism, can be tapped by the evaluation statements: "*My manager and I set expectations for this learning prior to attending this program"* and "After this program, my manager and I will discuss how I will use the learning on my job".

Alignment of learning and growth goals and L&D department

The alignment between the learning and growth goals and the offered possibilities is currently not being measured. The suggestion is to evaluate whether the offered learning and growth possibilities are aligned with objectives. For instance in the same way how department 6 of the cross-case analysis evaluates this alignment for its L&D products and the business needs.

Table 40 Main learning and growth measures

Objective	Measure
Offer employees the possibility to enhance	-Staff survey score: satisfaction with L&D
their skills, knowledge and competences	opportunities
Make managers aware that they have an important role in the success of L&D, and thus the performance improvement of their employees	 -Manager support L&D: currently measured during evaluation by survey question(s): My manager and I set expectations for this learning prior to attending this program. After this program, my manager and I will discuss how I will use the learning on my job.
Offer L&D products which are aligned with	-Alignment of the intervention/L&D goals
the organizational learning and growth	with the business (use prototype 5 of the
needs	cross-case as example)

5.5.4 Other learning and growth measures

For most of the organizational learning and growth objectives KBC is not solely responsible. In Table 41 and the upcoming sub-paragraphs four measures related to the KBC's objectives are presented together with how these shared organizational objectives can be monitored.

Mobility of employees

The mobility of employees can be measured as the percentage of employees that is working a certain amount of year in its current function. For example: 80% of the employees in this department have had their current job for more than 10 years. The mobility is not identified as a main measure since mobility is not only the responsibility of KBC and some decisions in this area lie outside the span of influence/control of the L&D department.

Manager quality

The managerial support for L&D is already addressed as a quality aspect of managerial professionalism. This is however a single aspect of managerial quality and the objective

to improve this quality is larger than only L&D support. In order to measure managerial quality Air France currently uses a managerial practice development score. This score taps seven competences found important as professional managerial competences within Air France. A similar score could be introduced for the managers in the commercial division and be used by KBC to measure whether L&D has impact. Since managerial quality is not only the responsibility of KBC this score is not seen as a main measure. The decision to introduce such a management quality score for the commercial division should be made in close collaboration with other stakeholders within the organization.

Team performance

By some of the L&D products provided by KBC the department has some influence on the performance of teams within the commercial division and AFKLM. However, team performance is not something that is only influenced by L&D and therefore a measure for team performance is not identified as a main measure for KBC. If it is desired to measure team performance one needs to be aware that the construct is hard to tap by a single measure, given the wide variety of aspects that define team performance. Therefore first team performance should be defined and measures should be identified if KBC wants to include team performance it in its management information.

Learning culture

The role that KBC foresees in supporting and developing the corporate learning culture is one that is hard to measure as no single measure exists which taps the various dimension of a learning culture. The multidimensionality of a learning culture is one of the reasons to not define it as a main measure which can be controlled. What KBC could do at this moment is to monitor the aspects influencing the learning culture, like trust, reflection and empowerment of employees. To measure a learning culture for instance the questionnaire of Marsick & Watkins, (2003) could be used.

Mobility of employees	-% of employees on #years in their function (not a main measures since out the span of control and not solely responsible).
Manager quality	-Managerial practice development score. This score measures pre-defined managerial competences and is currently used at Air France.
Team performance	-Hard to tap by a single measure, not only the responsibility of an L&D department. Can monitor the aspects that have an influence on team performance.
Support learning culture	-Not to tap in a single measure due to variety of dimensions forming learning culture. Can monitor the aspects found to have an influence on the learning culture.

Table 41 Other desired learning and growth measures

5.6 Business process objectives and measures

Where the first three sections of the BSC are used to develop financial, customer and learning and growth measures, the fourth section looks at business processes measures. The business processes related to corporate L&D have been depictured and described by the systems view of Rummler and Brache in chapter 3.

The same authors of the systems view also suggest how to develop sound measures. First of all measures for processes should be developed on three levels. Organizational measures should tap the performance between the department and its market. These measures have been developed by the top-down approach as the customer related

measures. The second level, job measures, should measure how well individuals within the organization are performing. Since these job performance measures are too specific for the internal operation of KBC, not all three audiences defined in the POV have a direct interest for job performance measures of KBC. Therefore these job performance measures are not further developed in this section. The main focus of this section will be on the development of the third level, the development of business process measures.

One of the problems with developing business process measures is to select the right measurement points given the large amount of processes going on in an L&D department, which all offer possibilities to be measured. Therefore it is decided to first lay the main focus for process measure development on the steps conducted in KBC's "oerproces". The oerproces contains the core activities of the L&D department. Related to the BSC the oerproces activities are the ones in which the department should excel. If KBC, or other L&D departments, desire to widen the scope, it would be possible to incorporate the other L&D process and aspects as described in chapter 3 as well.

Rummler & Brache, (1990) describe four steps to be taken in order to construct process measures. First, the significant outputs of a process need to be identified (5.6.1). Then the critical dimensions of these outputs need to be defined (5.6.2). Thereafter it is possible to construct the measures and metrics that measure these critical dimensions (5.6.3). Once the measures are constructed goals and standard values should be determined (5.6.4). Finally, if all these steps have been taken the main measures to be included in the BSC can be deducted (5.6.5).

5.6.1 Significant process outputs

The first step in determining process measures is to identify the most significant outputs of a process (Rummler & Brache, 1990). The oerproces is conducted in six steps: intake, analysis of the learning request, development and design of the learning solution, execution, administration and evaluation. From these steps the most significant outputs have been identified. The most critical output of for instance the administration process is that the databases are filled with reliable and complete data. The fourteen most significant outputs of the oerproces steps have been obtained from the oerproces description (Appendix VI) and are presented in Table 42.

Table 42 Most significant outputs of the oerproces

Process step	Most significant outputs
1.Intake	1.1 Agreement on alignment with Air France.
	1.2 Intake summary, including evaluation plan and
	questions, and further steps to take in dialogue and
	design.
	1.3 First cost estimation
2.Analysis of the learning request (dialogue and design)	2.1 Overview of the identified learning needs and
	causes. Is L&D the right solution?
	2.2 L&D goals and how these are aligned with the
	organizational goals.
	2.3 Rough product design.
	2.4 Customer permission.
	3.1 An L&D product that serves the customer
	needs, preferably co-created with the customer in
3.Designing the learning solution	order to align with the business needs, the learning
	needs and the current product offer.
	3.2 Detailed customer offer.
4.Execution	4.1 Reach of L&D product in the target audience
	4.2 Well-facilitated learning interventions, according
	to what is determined the in design stage.
5.Administration	5.1 Filling of the databases with reliable and
	complete data.
6.Evaluation	6.1 Evaluation data over the four levels and what is
	needed for management information.
	6.2 Overview of lessons learned during the process

5.6.2 Identify critical dimensions for the outputs

The next step is to identify what Rummler and Brache (1990) call the critical dimensions of the outputs. On the high level there are three critical output aspects: quality, productivity and cost. The critical dimensions of quality are: accuracy, ease of use, novelty, reliability, ease of repair and appearance. The critical dimensions of productivity are quantity, rate and timeliness. Labour, material and overhead form the three major dimensions of the cost aspect. The critical dimensions should be derived from the needs of the internal and external customer who receive the identified significant outputs and from the financial needs of the department (Rummler & Brache, 1990). Table 43 shows the identified significant outputs and the accompanying critical dimensions. These dimensions are based on customer needs and KBC's financial needs. To illustrate how the critical aspects are determined two examples will be described. The other dimensions have been deducted in a comparable way.

One of the significant outputs of process step 1 is an Agreement on alignment with Air France. The critical dimension of this output is that the agreement is arranged on time, otherwise the oerproces will be slowed down. The second example is based on the critical process outputs of step 3 and the fact that L&D products developed by the oerproces should serve the customer needs, preferably be co-created with the customer, align with the business needs, the learning needs and the current product offer. Looking at the productivity aspect the timeliness of the design processes is important as it influences the product development time. Also the quantity, the number of developed products, is a critical output dimension of the design step of the oerproces. The quality of the designed products lies in how accurate the L&D product aligns with the learning needs of the business. The cost to design an L&D product, paid by the organization, is the third critical output dimension of the design process step.

	Critical output dimensions		
Significant output	Productivity	Quality	Cost
1.1	timeliness	х	Х
1.2	timeliness	accuracy, reliability	Х
1.3	x	x	labour, material overhead
2.1	x	accuracy	Х
2.2	x	accuracy	Х
2.3	timeliness, quantity	novelty	labour, material, overhead
2.4	timeliness, rate	х	Х
3.1	timeliness, quantity	accuracy	labour, material, overhead
3.2	x	accuracy, reliability	Х
4.1	timeliness, rate	х	Х
4.2	quantity	х	labour, material, overhead
5.1	timeliness, rate	accuracy, reliability	labour
6.1	timeliness, rate	accuracy, reliability	labour, material
6.2	timeliness, rate	x	X

Table 43 Significant outputs and critical dimensions of the oerproces

5.6.3 Developing measures and metrics for the processes

The first two steps determined the significant outputs of the oerproces and the accompanying critical dimensions. In this third step a measure is assigned to each critical dimension. In this way measures are constructed based on the steps of the oerproces, which is visualized in Figure 32. The metrics and measures shown in the figure are only examples of what is possible to be constructed. As already addressed earlier in this thesis, a large variety of things could be measured and turned into information elements. To limit the amount of possible measures, and get a feeling of what is commonly used in L&D as process measures, the information elements obtained by the interviews served as a reference in the deduction of measures from the critical dimensions.



Figure 32 Example figure of how to derive measures and metrics from the oerproces, inspired on: (Rummler & Brache, 1990)

The suggested business process measures and metrics based on the oerproces steps and its critical dimension can be found in Table 44. The following example illustrates how this deduction has been done. The reach of L&D product in the target audience has been defined as a significant process output of the execution step. Important in this output is the rate, or how many people have been reached by the L&D product. In order to measure this rate the percentage of target audience reached can be used.

Table 44 Significant outputs of the oerproces and their accompanying measures and metrics

Output	Critical dimension	Measure and metrics
1.1 Agreement on alignment with Air France	timeliness	 Time between alignment request and approval
1.2 Intake summary, including evaluation plan and questions, and further steps to take in dialogue and design	accuracy	 % of completeness within all intake summaries
	reliability	 % of intakes with an complete intake summary
	timeliness	 duration between intake and complete summary
		Monetary estimation of the
1.3 First cost estimation	labour, material and overhead cost	various cost related to the L&D products to be developed
		• % Up to date learning
2.1 Overview of the identified learning		summaries ,which include
solution?	accuracy	learning needs and causes
Solution		after analysis
		 % of L&D products that
2.2 L&D goals and how these are	accuracy	have a statement of how they
aligned with the organizational goals.	accuracy	are related to the
		organizational goals
	timeliness	• time used to design the L&D
		product
	quantity	• # of L&D products
	quantity	a certain time period
		• use of novel technologies
		used in L&D product in order
	novelty	to increase impact, and/or
2.3 Rough product design		reduce non-productivity cost
		due to training
		 More detailed cost
		estimation of L&D product,
	labour material and overhead cost	including nog productivity
	about, material and overhead cost	hour due to training
		• Difference between first and
		this cost estimation
	timeliness	• Time between L&D oner and customer approval
2.4 Customer normination		• % of approved L&D
2.4 Customer permission	rato	proposals
	rate	 # proposals requires to get
		approval
	timeliness	• Time to develop and design
		L&D product
	quantity	and designed over a certain
3.1 L&D product serving the customer	quantity	time period
needs		 alignment of learning goals
	accuracy	with business needs
	labour, material and overhead cost	 average cost per L&D
		product per trainee
3.2 Detailed customer offer4.1 Reach of L&D product in the target audience	accuracy	• % of offers including all
		e difference between what is
	reliability timeliness	• difference between what is
		finally delivered
		• Time to complete training
		for complete target group
		% of target audience
	Tate	reached
4.2 Well facilitated learning interventions, according to what is determined the in design stage.	quantity	• # of executed L&D products
		# of provided training hours
		• real total cost of delivering
	about, material and overnead cost	training
		• time between learning
5.1 Filling of the databases with reliable	timeliness	intervention and up to date
and complete data	cirreni cos	data

	rate	 % of L&D products with correct information
	accuracy, reliability	 number of data bases with correct information
	cost of labour	•monetary cost of administration or re-planning
6.1 Evaluation data over the four levels and what is needed for management information	timeliness	• time between learning intervention and up to date evaluation data
	rate	•% of L&D intervention evaluated on all four levels
	accuracy, reliability	 number of completed evaluations per target audience/L&D product
	cost of labour, material	 cost to evaluate training
6.2 Overview of lessons learned during the process	timeliness	•time between intervention/ end of oerproces and shared lessons learned
	rate	•% of oerproces project with shared lessons learned

5.6.4 Develop a goal/standard for each measure

After determination of the measures as presented in the previous paragraph the next step, according to Rummler and Brache (1990), is to determine goals and standards for each of the measures. These goals and standards determine whether the process outcomes are seen as performed successful. To illustrate this goal setting: a target could be that after one year 75% of the L&D interventions have been evaluated on all four levels.

The step to determine the targets has not been taken in this research, since it should be performed in close collaboration with other parties like the managers involved in L&D and the employees of KBC. This collaboration should take place since the process measures are likely to have an impact on the daily operation and thus the mentioned parties involved in this operation. The parties should first agree upon the critical dimensions and suggested measures; hereafter it would be possible to set goals and targets.

5.6.5 The main process measures for the BSC

The method to determine process measures, as shown in the previous paragraphs, leads to a relatively high number (more than 30) of process related measures. For the BSC this number should be reduced, otherwise the management information can become unactionable or managers can lose overview. As is done for the other three sections of the BSC the vision and strategy can be used to derive measures and especially for the process measures, consolidate, and reduce the number of measures.

The first step to consolidate the process measures is to look at the oerproces as a whole, instead of six independent process steps. In this way the average time and the average cost to conduct the oerproces can be used as measures instead of a variety of time and cost measures. These two measures can also be related to the strategy statements "move fast", "low time to competence" and "make the budget". In its vision KBC performs the various takes related to L&D as professionals, which means in a structured fashion with thoughtful processes. As a measure for this objective the percentage of projects conducted according to the oerproces guidelines can be used. This measure gives an indication to managers whether the business process are conducted by the employees as agreed.

Within the oerproces evaluation is one of the core processes. Given the large amount of information and data that can be obtained from evaluation results the percentage of completed evaluation forms compared to the target group gives an indication for the relevancy and reliability of the evaluation process. This measure can also be used as an indicator for the achievement of KBC's the goal to evaluate training on all four levels of Kirkpatrick's model. Related to evaluation, but also to management information in general, is the accuracy and reliability of the various databases. If the data in the sources is complete and reliable, KLM's objective to base decisions within the organization on facts can be better achieved. Since the filling of the database is done during the steps of the oerproces, the measure for accuracy and reliability has been categorized under business process measures. Table 45 depicts the five main business process measures.

Table 45 Main business process measures for the oerproces

Objective	Measure
Move fast and low time to competence	 Average time to conduct oerproces
Make the budget	 Average cost to conduct oerproces
Operate the various aspects of L&D as	 % of projects conducted completely according to the
professionals	oerproces guidelines
Evaluate L&D activities on all four levels	 % completed evaluation form compared to target group
Base decisions on facts	 Accuracy and reliability of the various data bases

5.7 The initially desired information elements

By the top-down approach and the BSC a variety of main and other measures have been derived. Table 46 provides an overview of all the initial desired main information elements to be incorporated in the future management information system.

Balanced Score Card category	Initially desired main measures for future information system
Financial measure	Total cost of ownership
Customer measures	Impact
	Long term impact
	Net Promotor Score
	Customer satisfaction score
Learning and growth measures	Staff survey score: satisfaction with L&D opportunities
	Manager support L&D
	Alignment of the intervention/L&D goals with the business
	goals.
Process measures	Average time to conduct oerproces
	Average cost to conduct oerproces
	% of projects conducted completely according to the
	oerproces guidelines
	% completed evaluation form compared to target group
	Accuracy and reliability of the various data bases

Table 46 Initially desired main measures for future information system

The identified main measures, or information elements, need to be constructed from various data sources. For some information elements this data is already being collected, while for others data collection would need to start. The main measures derived from using the top-down approach can be found in Appendix IX as it would require too much space to present them in this paragraph. The tables in the appendix include the type of control for which the information elements can be used, the type of information element they are, and for which layers of management they are relevant. For the practical realization of the information system at KBC the appendix also includes whether the required data is currently collected or not. Also the data sources by which the data could be obtained are included in the appendix.
5.8 Summarizing conclusion

The goal of this chapter was to provide an answer to the question *what information elements can be derived from the operation?* The answer to this question can be seen as the thirteen main measures derived using a top-down approach and the balanced score card. In the development process of KBC's management information system, the department could first apply these main measures to steer and control its operation and evaluate, with the stakeholders, whether the use of management information enhances the managerial practices. The desired other measures could be implemented later.

The next chapter will first compare the main results, the information elements, from the bottom-up and top-down approaches. Thereafter the various research findings presented throughout this thesis will be clustered in order to provide an overview of the answers to the sub-questions. Based on the answers to the sub-questions an answer to the main research question can be constructed.

6 Conclusions

This chapter concludes the research conducted at KBC and presented in the previous chapters of this thesis. The objective of this research was to determine the desired management information elements for a corporate learning and development department. The bottom-up and the top-down approaches led to the main results of this research: two sets of information elements (6.1). To get these results the previous chapters gave answers the various sub-questions. Since the findings are spread over different parts this chapter will consolidate them based on their related sub-questions (6.2). From all these findings a conclusion can be framed which provides an answer to the main research question (6.3).

6.1 The information elements as the main research results

The information elements derived by the bottom-up and the top-down approach can be seen as the main results of this research. First the elements were derived using the bottom-up approach, which practically means that the management information of six corporate L&D departments, obtained by semi-structured interviews, has been analyzed in order to find commonly used information elements. To conduct the top-down approach the case study example of KBC was used to derive their specific information elements. During the top-down derivation the Balanced Score Card of Kaplan & Norton (2007) was used as a support tool and in order to derive the processes measures the steps suggested by Rummler & Brache (1990) have been taken.

The findings of the bottom-up approach showed that corporate L&D departments have generally included the following eight concepts in their management information: effectiveness, impact, performance, satisfaction, time, quality, cost and efficiency. The interpretation of these high-level elements, i.e. the definitions of the concepts and how they are measured, differs per organization/L&D department. As a result a relative unstructured, yet more concrete in terms of what should be measured, set of related lower level information elements was presented in Table 35 alongside the eight high level elements.

Practically, the main reason to identify the commonly used information elements using the bottom-up approach was to incorporate the findings as the desired information elements in the future management information. However, the eight commonly used high level elements give no definite answer to the question what is measured and which data should be obtained. This is because the high level elements can be defined and measured in too many ways. To illustrate these latter problem: where the high level element cost is measured at one department as the total cost of ownership, another department monitors the investment cost per region and yet another department uses the cost of non-productivity. As a result, the high level measures cannot directly be set as desired elements, since the system developers would first require a company specific interpretation of the concepts. Hereafter they can let a system obtain data and use it to construct information. To incorporate the lower level elements as an alternative to the high level elements would be questionable given the discussed dangers of using management information of others.

The thirteen information elements as presented in Table 46 can be seen as the main result of the top-down approach. Alongside a relative large set of so called other measures and metrics has also been identified. Since these top-down elements are derived from the vision and strategy via critical processes they better fit KBC's specific context than the lower level elements of the bottom-up approach. A main difference between the top-down elements and the high-level elements of the bottom-up approach is that the first mentioned set has already been defined in terms of what to measure. Therefore the top-down elements can be implemented and evaluated earlier in practice. As said the high-level bottom-up elements would first require more context, e.g. KBC's

specific definitions, before they can be constructed, communicated and tested during the future development phases of the information system.

6.2 Answering the sub-questions

Chapter 1 first introduced KBC and their request for research into management information for corporate L&D. By the means of a preliminary literature review their specific request could be framed as a general business need for corporate L&D management information systems. Based on this general business need the research objective was set, one main and three sub-questions were formulated, and a research strategy was determined. Thereafter chapters 2 till 5 tried to formulate the answers to the three sub-questions. The upcoming paragraphs (6.2.1, 6.2.2 and 6.2.3) consolidate the various findings related to the sub-questions and thereby summarize the answers to these sub-questions.

6.2.1 What is management information and how can information elements be determined?

The main goal for chapter 2 was to answer the first sub-question and create an understanding of management information as the desired artefact. Therefore chapter 2 first defined management information as a set of information elements used, by the management of an organization, to obtain insight in the performance of an organization and to support decision making needed to steer and control the organization. Thereafter the various usages, types and levels of (management) information were presented.

The other part of question asking how information elements could be determined was answered by the two identified approaches. The bottom-up approach selects information elements from all the possible measures and metrics and the top-down approach derives information elements based on vision, strategy and core processes. In the development of an information system the determination of the required information elements (i.e. measures and metrics) that will from the management information is one of the crucial steps. Without the right information, managers are no able to steer and control their organization in a proper manner and the management information system will most likely not support the managerial practices around corporate L&D.

One of the sections in chapter 2 explained what (management) information systems are. What can be concluded about these systems is that once the desired information elements are known, the current technology should no longer be the bottleneck to further develop and implement a user-friendly management information system for corporate L&D. Assumed that the (technologies of the) system are/is further developed, implemented, tested and maintained by the right (IT) experts, current technology allows to construct and communicate any desired information for a variety of audiences.

6.2.2 How does a corporate learning and development department operate and what information elements can be derived from the operation?

The answer to this sub-question was obtained in two parts. First chapter 3 provided an answer on the question how a corporate learning and development department operates. Later in the thesis chapter 5 answered which information could be derived from the operation for which the top-down approach was used.

Proper development of any information system requires its developers to have an understanding of the environment for which the system is developed, i.e. in this case the organization, people and technology of a corporate L&D department. The three components of the environment have a large effect on the vision, mission, strategy, operation, employees, roles, responsibilities, culture, resources, processes, and development capabilities of any organization. Without an general understanding of the environment it would be almost impossible to develop an artefact which viable, feasible

and desired. In order to better understand the corporate L&D environment chapter 3 elaborated on the case of KBC and on the operation of corporate L&D departments in general, using the systems perspective of Rummler & Brache (1990). The ten elements of the systems perspective allowed to see KBC as a separate business entity within AFKL, having its own processes, people and technologies. The instructional design process, at KBC the called the oerproces, was identified as the core process of an L&D department. In general this process consists of the steps: analysis, design, development, implementation and evaluation.

During the top-down derivation of management information, presented in chapter 5, it turned out that the ten elements of systems perspective were helpful in determining the information elements. To derive the information elements the balanced score card was used as a tool, since its four sections (finance, customer, learning & growth and business processes) help to tap the multidimensional conceptualization of performance and give the information elements a theoretical foundation. The information elements derived by the top-down approach as presented in chapter 5 form a milestone for the further practical development, testing and implementation of the management information system of KBC.

6.2.3 What management information elements are currently used in theory and practice to manage corporate L&D departments and evaluate their value?

In chapter 3 it turned out that within the L&D environment evaluation plays a rather big role since it is, together with analysis, design, development and implementation, part of the core-process of most L&D departments. The main idea behind evaluation in the L&D core-process is to assess how effective and efficient the L&D related activities were performed. Evaluation allows a corporate L&D department, its customers, and the organization to determine whether the learning goals have been achieved and if the corporate resources have been allocated in a proper fashion. In chapter 3 various methods of training evaluation have been discussed, showing the various ways of how the value of corporate L&D could be determined according theory. Kirkpatrick (1998) evaluates the value brought by learning on four levels: reaction, learning, behaviour and results. Phillips (1997) adds the monetary value of training outcomes, as the return on invest, to the four levels of Kirkpatrick. Brinkerhoff (2005) uses a more qualitative approach to evaluate the value of brought by learning as he suggests to construct success case stories besides quantitative evaluation data.

To find out which information elements are most commonly used in practice, chapter 4 presented a cross-case analysis in which the management information of six other L&D departments was assessed. The cross-case analysis can be seen as a bottom-up approach to select information elements from a large pool of used measures and metrics. The interviews showed that each corporate L&D department is subject to its own environment and as a result each department has developed its own specific measures and metrics. From a high-level perspective the eight concepts of cluster 1 (effectiveness, impact, performance, satisfaction, time, quality, cost and efficiency) can be indicated as the main elements incorporated in L&D management information of most organizations.

The differences in the environment do not only influence the used measures and metrics, but also cause that many organizations use their own technologies and systems to obtain data and to communicate the information elements to a variety of audiences. Based on the use of their information the departments can be placed along the different stages of the maturity model. While the departments at the lower stages are often struggling with the technology and correctness of data, the departments of the higher stages have the technologies and systems in place and can use their information in a more advanced way. The departments finding themselves at the higher stages struggle with determining what information is actionable and finding out which analytical findings show correlation and which causalities.

6.3 Answering the main question

The main question of this research was: *Which information elements evaluate the value of corporate learning and development activities?* To formulate an answer to this question it is first of all needed to understand what can be defined as the value of corporate L&D activities. Thereafter the appropriate information elements can be linked to this value.

From the findings presented in the preliminary literature review one can conclude that a corporate L&D department has a supportive function within an organization. The main task of most L&D departments is to enhance the human capital within their organization. That is, the L&D department tries to improve the knowledge, skills, habits, capabilities, attitudes and competences of the employees. The organization on its term can utilize its human capital as a strategic resource to enhance its performance and even gain a competitive advantage. As a result the alignment of the L&D operation, its products, and the learning goals of its products with the learning and growth needs of the business can be seen as a measure to express the value brought by the L&D activities.

This is where the bottleneck of corporate L&D management information reveals itself. Most managers would like to have actionable and quantifiably measures to monitor and steer their business. However, the value brought by corporate L&D lies in the ability to develop skills and competences required by the business. This alignment is a complex construct, not to grasp by a single quantitative measure or metric. Various researchers tried to construct a quantitative value to express the value/alignment of corporate L&D. The most commonly used example is the level four measure of Kirkpatrick (1998): business impact. However, this business impact is a subjective measure, constructed during the development and design process by the L&D department and its customers. In fact, the level four score measures the customer satisfaction about how well the learning intervention contributed to the earlier defined business/learning need. It implies that the score, and so the value of corporate L&D which is expressed by that score, is just as good as the ability of the business and L&D department to express the learning and growth needs of their organization. Moreover, the soundness of the business impact score in measuring the value of corporate L&D is only as good as the measures and metrics used to evaluate the impact. Even if the business learning and growth needs are properly defined, formulated, measured and monitored, it is still hard to proof causality between the learning intervention and the impact on the business. The latter is due to the high number of variables influencing business performance.

However, the complexity to measure and express the value of corporate learning in terms of alignment does not imply that corporate L&D management information or evaluation results are useless. As the cross-case analysis and the top-down approach revealed various measures and metrics can be constructed and are used in practice to monitor the operations and steer the L&D department as a business. The efficiency and effectiveness of an L&D department can still be expressed in objective and quantifiable measures. Examples are the cost to operate the department, the number of people trained and the time to develop and design the learning product. The difficulty however is that these kinds of objective, almost factory like, measures are not satisfactory for the information needs of all managerial audiences. To illustrate: for L&D managers objective measures are hard to be used to support their decision making, as for instance the time it took to develop a learning product does not say much about how well it will satisfy the learning needs and the number of hours that a trainer was in front of the class says nothing about how well he teaches. On the other hand, for business managers the objective measures like a cost breakdown of percentage learning budget spent, illustrate how their resources have been allocated and used. To satisfy their information needs most managers in the L&D environment include subjective measures in their management information, like the satisfaction with learning and growth opportunities, the managerial support for learning, the top 10 most popular training or the learning impact scores.

If an L&D department collects a combination of objective and subjective quantitative measures, metrics, graphs, figures and facts, it will at least be enabled to communicate these findings and to use the management information as a support tool in the managerial practices around corporate L&D. Without management information the department and the involved managers are more or less flying blind. The managerial desire to express the performance of the L&D department or the impact/value brought by corporate L&D in single quantitative measures seems unrealistic. This is supported by the fact that the impact measurement framework as presented in Figure 18 already identifies nine measurement areas to be monitored and tracked. To assess the value of L&D activities a variety of measures and metrics, as suggested in literature or derived by the bottom-up and top-down approaches, is required. Besides quantitative impact measures, preferably also qualitative information, like obtained by using the success cases method of Brinkerhoff (2005), should be considered as useful management information.

7 Discussion and future work

The previous chapter summarized the main results of this research and provided the conclusions to the sub and main research question(s). This final chapter will reflect upon the work done and give suggestions for future work. First the various moments of evaluation that took place during the research will be discussed (7.1). The second section reflects upon the work done and discusses whether the objectives have been achieved, whether the questions have been answered and whether the used methods were appropriate and conducted properly (7.2). The third section will discuss the main implications of this research for practice, theory and for Management of Technology (7.3). The final section will provide suggestions for further practical development and implementation of the system and suggestions for future research (7.4).

7.1 Evaluation of the management information systems and information elements during the research

For the readers of this thesis it might appear as if the steps taken to arrive at the results have been conducted in a linear fashion. However, inherent to the development and design of an information system the process towards the results was iterative in nature. This is for instance caused by the fact that during the research from time-to-time the desirability, feasibility and viability of the future management information system have been evaluated with some key stakeholders within and around KBC. These evaluations have not been presented earlier in this thesis, but since they had an impact on the research process and its outcomes, they will be discussed in this section. The evaluations were done relatively early in the total development process of the information system, in order to define and adjust the system requirements (i.e. required information elements) before large investments in the development of the system have to be made. The main stakeholders who were involved in these evaluations are: the director of Ecole des Ventes (KBC's counterpart), the management team of KBC, KLM's commercial division Human Resource manager, and the financial controller. The upcoming paragraphs (7.1.1 till 7.1.4) shortly describe who these stakeholders are, why they were involved in the development process and what their contribution/influence was to/on the final results presented in this research. The evaluations were conducted in a relative unstructured fashion and a final evaluation on the found information elements did not take place, which can be seen as two limitations of this research (7.1.5).

7.1.1 Evaluation with the director of Ecole des Ventes

The director of Ecole des Ventes [EDV] can be seen as the counterpart of KBC's general manager. Since EDV is supervised by the same EVPs as KBC it made sense to involve this stakeholder in this research in order to jointly develop the future management information elements. Jointly developed and defined information elements should allow the EVPs to assess the two L&D departments within the commercial division on the same information and make comparisons.

First of all the desirability of a joint management information system has been discussed with the director of EDV and the general manager of KBC. From this discussion can be concluded that such a joint systems is desired by both L&D managers, in order to deliver comparable information. The desire for comparable information implies practically that KBC and EDV will have to agree upon the definitions of the suggested information elements. In order make comparable information technically feasible, it would be helpful if the two departments can rely on the same systems and methods of evaluation, as these methods would ease the generation of comparable data.

Besides the desire for a joint system also some desired information elements were discussed. EDV's initially desired information elements were: the number of trained people, classroom occupation, which training has been followed most, the number of provided training hours, a cost breakdown of the L&D department, a measure of non-productivity caused by training, the response rate of evaluation, ratio

preparation/development time versus face-to-face (trainers) and the ratio between elearning development time versus the time these solutions are used. Some of these measures can be found in the suggested measures of chapters 4 and 5, the others could be included if still desired.

7.1.2 Evaluation with the Management Team of KBC

The following roles are part of the internal Management Team [MT] of KBC: the general manager, the head of the training coordination centre, a representative of program development and the manager trainers. Halfway through the research the management team has been updated about the progress. At this moment most of the other L&D departments of the cross-case analysis had been interviewed and feedback was needed on the desirability for, and feasibility of, a management information system. To obtain the feedback the concept of information systems was made tangible using the five prototypes which were presented during a MT-meeting. The feedback provided on the first prototypes and included information elements is presented in the upcoming sub-paragraphs.

General Manager

Looking at the measures and metrics used at the other L&D departments the general manager remarked that the implementation and use of a management information system should not lead to a command and control culture/environment within the department. Practically this implies that for instance the evaluation scores given to a trainer should never become a standalone measure to assess performance and judge a trainer. The score should be used to indicate and monitor the learner satisfaction. A structural low score can be used as an indication that something might be wrong and it can open a conversation with the trainer about the causes of this low score.

Head of the training coordination centre

The head of the training coordination centre is currently assigned with the task to obtain the data from the LMS required to construct the CSR and CBS reports. Currently the processes to obtain data and construct tables and graphs are time consuming. There is also a relative high chance that the obtained data contains errors, making the measures and metrics constructed from the data less reliable. For a future information system it would be desired that the processes to construct the information requires less effort and that data collection is less prone to mistakes. Practically, it would mean that the software behind the systems allows an easy construction of measures and metrics, like the sandbox construction of prototype 3. Another option to reduce the workload would be to outsource (preferably within AFKL) the collection of data and the construction of the desired information elements to parties with more expertise.

Representative of development and design

As due to the current technology the feasibility of a management information system should no longer be the bottleneck, the main remark of this MT-member was to assure that KBC gets a good vision on which information it desired and how the measures and metrics are defined.

Manager trainers

Related to his role, the manager of the trainers remarked to be interested in information about trainers, both internal and external. For example how they scored in the evaluation surveys. This information can be of use in order to open conversations with trainers about their performance and to support decision making about which trainer to hire for a certain training.

7.1.3 Evaluation with the financial controller

Once it became clear that financial measures and metrics play an important role in performance measures and management information, the feasibility to construct these measures for KBC and the possibility to make a cost breakdown have been evaluated with the financial controller. He remarked that if KBC knows which financial measures and metrics it desires and how it wants to allocate and break down the cost, it would be possible to construct the information.

7.1.4 Evaluation with the manager KLM Human Resources

KBC envisions future communication of the information elements towards the human resource manager and the EVPs of the commercial division. Therefore the KLM Human Resource manager has been involved in the evaluation of the information elements after these were derived for the first time by the top-down approach. The main conclusion form this evaluation moment was to make more explicit which information elements are desired and how these are linked to the strategies and visions of KBC, the commercial division and AFKL. Therefore the links between the mission, vision, the objectives and the measures and metrics have been presented more explicit in chapter 5.

7.1.5 Reflection on evaluation approach

Evaluation and early feedback of the various stakeholders is important in the development process of an information system in order to get a feeling for their desires and requirements of the system. During this research the evaluations as described in the previous paragraphs took place during meetings. These meetings were planned and prepared, but still the course of the conversation was often different than expected. This made it hard to obtain explicit and structured feedback, useful to assess the stakeholder requirements. Due to time constraints the information elements, the main results of this research, are still to be evaluated with the various stakeholders before the next steps in the development of the information system should be taken. All in all it would have been better to use structured tools, like surveys, to conduct the evaluation and to include an evaluation of the final results. This would also better strive with the third guideline for information systems design science research, which prescribes that the utility, quality, and efficacy of a design artefact must be rigorously demonstrated via well-executed evaluation methods.

7.2 Reflection on work

The upcoming paragraphs will reflect upon the work and discuss whether the research questions have been answered (7.2.1), the objectives have been achieved (7.2.2), the guidelines of the research strategy were met (7.2.3) and if the appropriate methods have been used in a proper manner (7.2.4).

7.2.1 Have the questions been answered?

The following questions were included in KBC's research request.

- How many and which employees have we trained?
- How much have we spent on L&D?
- How can the performance/ productivity of our department be measured?
- How can the added value of this corporate L&D department be evaluated?
- On the basis of which Key Performance Indicators [KPIs] could/should the department be managed?

The identified measures and metrics differ from the expressed practical information needs like *How many and which employees have we trained*? and *How much have we spent on L&D*?. In fact, this research has not tried to directly answer these practical questions for KBC. Instead, the main focus has been on answering the second of the three other questions, given the main research question *Which information elements evaluate the value of corporate learning and development activities*?. The results of this research provide answers to these two questions and to the three research sub-

questions. The questions *How can the performance/ productivity of our department be measured?* and *On the basis of which Key Performance Indicators [KPIs] could/should the department be managed?* have been indirectly answered. The productivity of a L&D department can be seen as the delivered and provided products and services, these numbers can be measured. Performance can be seen as how well the departments produces its outcomes, which can be monitored using the evaluation results and the process information elements. KPIs are nothing more than properly selected measures and metrics, therefore the metrics identified by the top-down approach could serve as KPIs for KBC.

7.2.2 Have the objectives been achieved?

At the start of this research there was KBC's request to draft and determine (key) performance indicators, determine the required data, information and (IT) systems needed to report these performance indicators and to (re) structure the internal administrative processes. These practical objectives were translated into the research objective to generate the requirements for a management information system in relation to corporate learning, with a specific attention to the desired information elements.

The identified information elements obtained by the top-down approach can be seen as the desired information elements and thus as the requested indicators. The information elements derived by the bottom-up approach can be seen as a benchmark pool of possible information elements. For the thirteen main elements derived by of the topdown approach has been identified which data is required for their construction. In chapter 2 the general architecture of a management information system has been discussed and the five prototypes presented in chapter 4 can be seen as examples of how KBC could communicate its information. The internal processes needed to generate and obtain the data required for construction of the information element have not been (re) structured during this research.

During this research the main focus has been on the identification of the desired information elements for three levels of management involved in corporate L&D. As a result the user- and functional requirements of other information audiences and the system requirements of other information system users have not been taken into account so far. This could be seen as one of the limitations of this research with respect to the design and development of an information system. Before further development and implementation of such as system, so before setting up the structural specifications, it would be required to make all the functional, user, and contextual requirements and the assumptions more explicit.

7.2.3 Have the guidelines been followed?

In the research strategy presented in chapter 1 seven guidelines to execute and evaluate design research were introduced. The first guideline prescribed that a viable artefact has to be produced. The artefact produced by this research is formed by the identified information elements and the five prototypes. An IT-artefact, that is a management information systems or parts of it have not been build.

The second guideline, the relevancy of this research problem, has been presented in the findings of the preliminary literature review. To summarize the relevancy, most large organization have an L&D department and as seen during the interviews these departments, like KBC, use or want to use management information to enhance their operation.

The third guideline prescribes that the utility, quality and efficacy of the designed artefact must be rigorously demonstrated via evaluation. As mentioned in 7.1.5 this is where the research has some limitations, since the conducted evaluations where relative unstructured and the final elements still have to be evaluated. Despite the limitations concerning the evaluation of the information elements, they still contribute to the

development of the management information system for corporate L&D as part of the design requirements.

The upcoming paragraph will discuss the fifth guideline in more detail and reflect whether the right methods were used and if they were used rigorously.

The sixth guideline prescribed to use the available means to arrive at the desired end. Where various research means where used to determine the desired information elements, there was less focus on the real construction of these information elements and testing their feasibility and the feasibility of a management information system at KBC. It would have been interesting to construct the suggested information elements with the current available data, or even collect new data, and test whether this information aids the managers involved in L&D. In this way more of the available means would have been exploited and more insight would have be obtained in the viability and feasibility of the information system.

To meet the final guideline this thesis should contain enough information for ITdevelopers to understand the L&D environment, the derived information elements and how to proceed with the development of an information system. For the management audience this thesis should show what value information systems and the suggested information elements can add, in order to have arguments to proceed with the development and implementation of such a system for the L&D department.

7.2.4 Were the right methods used and were the methods applied properly?

The research was conducted in four steps: understanding the artefact, understanding the environment, deriving management information elements using the management information of others and deriving management information elements from own operation, before the previous chapter could answer the main question.

Literature review to understand the research request as a general problem

To get an understanding for the business and research problem a literature review was conducted. The result of this review was a conceptual framework. This framework showed how the concepts of L&D and management information are related based on what was found in various literature sources. The framework can however not be seen as a conceptual model, which might be one of the limitations of this research. To test the impact of an information system it would have been interesting to have a conceptual model, including the relationship between variables. However, with the results of the review only a framework could be constructed.

Understand the environment

To describe the operation of an L&D department the systems perspective and its ten elements were used as a framework. A combination of observations and interviews at KBC and the other L&D departments and various literature sources were used to explain each of these ten elements. Combination of the various information sources should ensure that the description of the L&D departments operation is specific enough to fit KBC, yet general enough to be useful for other L&D departments as well. Bersin and other practical sources like Bakx (2013) have been used as the main sources to obtain general information about corporate L&D operation and products. The fact that the information to describe the L&D operation was often not obtained from scientific articles could be seen as a limitation of this research.

Deriving the management information elements

Several remarks can be made about how the two approaches to derive management information elements could have been conducted better. First of all, only six interviews with other corporate L&D departments were used for the bottom up approach, which is a relative small sample. The small sample size lowers the generalizability of the interview

outcomes. It would have been interesting to have interviewed more L&D managers, or even other stakeholders involved in L&D in order to make the findings more reliable and general. Another remark about the interviews is that during these interviews handwritten notes were made instead of audio records. If there would have been records of the interviews better content analysis would have been possible. Currently the content analysis was conducted using word-count and Excel, which is not a very rigorous and reliable method. It would have been better to use a data analysis tool like ATLAS.ti instead. A final remark about the content analysis is that the coding of the commonly occurring concepts and the clustering of these concepts were only done by this and no other researcher. To rise the validity and reliability of the results it would have been better if more people would have coded and clustered the concepts.

The first remark on the used strategy to derive the information elements from the top down is that only the balanced score card has been used as a supporting tool while in theory and practice various methods exist. It would be interesting to use some kind of triangulation and see whether other methods would lead to the same or comparable information elements. A limitation concerning the steps taken with BSC is that only the first two columns are filled, leaving the targets and the initiatives columns open. A final remark about the top-down approach concerns the generalizability of its results. Since the information elements are based on the company specific strategy and critical processes it is questionable if all these elements are of importance for L&D departments in general.

7.3 Implications of the research results

The research findings and the results present throughout the thesis have several implications for the practice of corporate L&D (7.3.1), for theory (7.3.2), and for management of technology and high-tech firms (7.3.3).

7.3.1 Implications for practice

As stated in the beginning of this thesis, the environment around corporate L&D is changing and managers become more and more focused on the contribution of their department. As a result they desire management information to monitor and steer the operation of the department and evaluate whether the right investments have been made. As stated in the previous chapter the main value contribution of a L&D department lies in the ability to identify the learning needs of a business and translate these in the right learning products: alignment. For the operation of a corporate L&D it implies that a fair amount of time should be spend on, collaboratively, identifying the corporate human development needs, required to keep the organization one step ahead of its competitors. If later in the evaluation phase the contribution to the organization can be expressed in the terms like the organizational learning needs and how well the learning goals were achieved, a large part of the contribution is already made explicit. Alongside, a management information system including process data could be used to meet the other information needs, like the number of people trained or the amount of budget spent.

If an L&D department wants to use its information and data for more advanced purposes other than just generating reports, it should first of all ensure to have the right experts. Without the right experts the foreseen analyzes could lead to all kinds of irrelevant, insignificant or even wrong conclusions. The department should also realize that well performed analyzes often require significant investments in terms of time and money. Therefore a L&D manager should assess whether the investments for evaluation and analysis are reasonable compared to the cost of the learning intervention.

During the interviews was seen that the roles and operations of other corporate L&D departments do in essence not differ much from KBC. Therefore can be said that most of the identified (process) measures and metrics and other research findings could be useful for other corporate L&D departments as well. The managers of other L&D departments should be aware that the information elements indentified by the top-down approach

were derived for the specific case of KBC. The findings of the bottom-up approach can serve as a reference for others, however these concept based elements require definitions in terms of measures and metrics before they can be implemented.

A final practical implication of the top-down method is that the indentified measures and measure should be kept up-to-date. This is because the strategies and visions are likely to change over time and the accompanying measures and metrics should be changed accordingly.

7.3.2 Implications for theory

From the preliminary literature review was concluded that theory lacks a commonly accepted set of management information elements for corporate L&D. The, mainly explorative, results of this research provide some indication of what kind of information elements are commonly used in the corporate L&D environment. Thereby the findings of the bottom-up approach can be seen more useful for science in general than those of the top-down approach. This is because the latter category of findings are too company specific as they are derived from the strategy, vision and processes of KBC.

The use of multiple theories and methods to derive the information elements for corporate L&D could be seen as a contribution to science since it serves the call for research that should appropriately align the research context (L&D) with performance measurement and the call to practically develop information systems. With respect to the design-science research framework can be said that the use of various methods and theories enables additions to the knowledge base.

7.3.3 Implications for Management of Technology

The master Management of Technology strives to teach its students to understand technology as a corporate resource. A management information system can be seen as such a technology, used to support decision making and enhance organizational efficiency and effectiveness. While these systems are already longer at use in for instance production environments, supportive departments like corporate L&D often seem not to use its full potential. Given the possibilities that these information systems offer, like making predictive analytics, they can be useful for L&D and human resource development in general. Human capital is an important corporate resource which many organizations use as their strategic advantage. Especially innovative firms, developing new products and services, strongly rely on the knowledge, skills and capabilities of their employees. Also the rapid changes in for instance technologies require employees to constantly update their knowledge and skills. As a result, learning is at the heart of many innovative firms, for which the results of this research might also be useful.

7.4 Suggestions for future work

Practically the derived information elements form a good starting point for further development and implementation of the management information system (7.4.1). Finally some suggestions for further research are presented (7.4.2).

7.4.1 Further development and implementation of the information system

In this research the desired information elements have been identified for the three layers of management involved in L&D at KBC. As mentioned earlier in this chapter these information elements still need to be evaluated with most of these stakeholders. The evaluation of the desired information elements can be seen as the first next step in the further development and implementation of the information system. After the evaluation of the desired elements, KBC could continue the development processes with rapid prototyping. By constructing the suggested elements from the current available data, KBC can make the ideas tangible and the identified measures and metrics assessable. Once this information is obtained, for instance the NPS scores become available, KBC could test whether this information helps them in managerial decision making and whether actions can be found to alter the scores. If it seems that a metric or measure does not aid as foreseen or desired, it can be adapted or removed. If, after the rapid prototyping, KBC and the other stakeholder agree upon the desired information elements a next step would be to complete the BSC procedure by setting the norm scores for the remaining or new measures. Thereafter, IT experts will require the remaining system requirements before they can build and implement the management information system.

7.4.2 Future research

Normally a complete design-science research is conducted in two complementary phases: development/building and justification/evaluation. The main focus of this research has been on the development part and the determination of the required information elements. A first suggestions for further research is therefore to proceed with the design science research and thus the development and implementation of the management information system. In this way the systems and the suggested information elements can be tested in practice.

Another suggestion for research is to more or less repeat this research, starting with an evaluation to determine whether all the suggested information elements indeed possess a strong theoretical rationale on the nature of performance. It could be that another research, using other methods to derive information elements from the top-down or more cases for the bottom-up approach, concludes that that the performance of a L&D department could/should be measures differently than suggested by this research.

A third suggestion for research is to use L&D and other company data for analytical purposes and see whether certain trends, correlations or relations can be found. For instance whether L&D investments correlate with the performance of the core business. As a starting point departments that find themselves in the higher stages of the maturity model could be used. What can be concluded from all the data of a corporate L&D department? Which trends, correlations and causalities occur? and What corrective actions can managers take? are interesting research questions.

Since the intake process can be seen as one of the key process steps in corporate L&D a final suggestion for research is to find a method to properly conduct learning needs assessments and intakes. Since the performance consulting role of L&D departments becomes more and more important a future research could focus on how a corporate L&D department should analyze the learning and growth needs of its organization and assure that it provides the right learning solutions or advice.

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Appendices

The upcoming pages present the appendices of this thesis.

Appendix I. Balanced Score Card method

A scorecard is a graphical representation of information which shows how well a certain process is proceeding. Kaplan and Norton introduced the balanced score card as a tool to implement strategy and aid management reporting. The balanced scorecard uses four perspectives to look at an organization and its processes: Financial, Customer, Learning & Growth and Internal Business Process. Causal relation exists between these four elements, making it impossible to use them separately. Each scorecard variable should fit in the chain of causal relations in which they enhance each other (Veen-Dirks & Wijn, 2004).



Figure Balanced scorecard, source: (Kaplan & Norton, 2007)

Appendix II. Found pitfalls in the use and determination of MI and KPIs

This appendix shows some of the commonly mentioned pitfalls in theory and practice about the use and determination of management information at KPIs. (Passionned Group, 2014) (Velaction, 2013) (Kaplan & Norton, 2007)

• Solely use of bottom-up approach

Solely use of a bottom-up approach to determine KPIs could lead to metrics that have a "wrong" focus and do not measure the performance of that specific organization. This has been described in the thesis as the chart-before-horse mistake.

• Wrong balance between selected information elements.

A wrong balance can occur if for instance only financial metrics have been chosen as KPIs. This could lead that managers focus only on the cost, and that they do no longer monitor the quality of the products they deliver.

• Mismatch between strategic level and metric/KPI level

Since managers have different responsibilities, they could make the mistake to choose a certain KPI to manage their objective which is too narrow. To give an example: a CEO of a large car factory could have selected only KPIs on production level.

• Lack of insight in the causality

If there is a lack of insight in the causalities between operation, observation, metric and performance, it is hard to determine the right KPIs. The danger lies in the possibility that the scope of KPIs is too narrow and that important influential factors for success are ignored.

• KPIs/metrics are un-actionable

This occurs when managers or employees are unable to ac or do not know what to do, if a certain performance as monitored by metrics lies outside the norm or desired state.

• Different actions and understanding due to poorly defined metrics/KPIs

One result of a different of misunderstanding of the definition of a metric is that conflicting actions take place within an organization. If for instance a certain customer satisfaction score is set as KPI it could be that the marketing manager interpreters it differently than a financial manager. This could lead to different and even conflicting actions within an organization to alter the metric's value.

• Focus on too many KPIs

Not every metric is a KPI. If an organization promotes to many metrics as being important and critical and when places too many information on a dashboard, it could be felt as an information overload. Instead of that the information makes clear what to decide or do, too much information could cause a "freeze" reaction, as one can no longer oversee the consequences of his actions in all these metrics.

• Lack of communication

Once the management has decides to steer on certain KPIs or information, people should know what they are being measured on. If a call-centre employee does not know that his performance is measured as customer satisfactions score, he can or will not act as desired or foreseen by the management.

Appendix III. Intuitive presentation of management information

In the first example a table and figures that show the number of trainees per month over the years 2012 till 2014 are presented. While the table actually contains just 39 data points, it hides a lot of potential information. However, since a table is not the most intuitive way to present information, the information remains hidden in the numbers. Once the data is visualized, in for instance graphs, it becomes a lot easier to "understand" and use the data. One can for instance quickly see that that during the summer months, June, July and August, the number of trainees assigned in the LMS drops. A graph makes it also more intuitive to see that the total number of trainees was the highest in 2013. This example is still relative simple, but in the graphs also the desired number of trainees, set as a strategic objective, could have been presented. Then it becomes more intuitive to see whether the objectives have been realized or not.

The second set of figure and table provides another intuitive example for the presentation of budget spending using a geographic map, the size of the circles also indicate the relative size to the total amount spent.



Example 1 of Intuitive presentation of management information



	Europe			Americas		Asia	Africa	Oceania	Middle East
	Netherlands	France	Rest	North America	South America				
Budget spent (*1000)	\$15.00	\$18.00	\$30.00	\$22.00	\$15.50	\$42.00	\$20.00	\$45.00	\$33.00

Example 2 of Intuitive presentation of management information

Appendix IV. Conspiracy of convenience

The conspiracy of convenience works according to Charles Jennings as follows (Jennings, 2010):

"a. A senior or not-so-senior manager contacts an L&D manager and says "I have a problem. My team isn't performing. We're not hitting our targets. I think some training will help. Can you please train them?"

b. The L&D manager, knowing that designing, developing and delivering training courses is the key part of their job, agrees to the task. They get underway.

c. A Training Needs Analysis may be the first step, but analysis as to whether the lack of performance is really due to lack of knowledge or skill (where training may help) or some other factor (where training can't) is not considered. Neither are approaches other than content production and delivery. Training is the activity. Modules, courses, programmes are the one-trick pony.

d. The training is designed, developed and delivered with great care and attention.

e. Feedback is gathered from participants ('did you enjoy the course'? 'do you feel the module/course/programme met your needs?). Maybe some form of pretest/post-test was used (measuring short-term memory only, incidentally), but there is no measurement of the impact on performance and productivity. No-one measures longer term behaviour change. No-one tries to link improved skills to improved productivity or profitability (too hard to isolate the variables!). No-one holds the L&D manager accountable for results (phew!)

f. The training has no impact whatsoever. (The business manager will be back at L&D's door a few months later with another request "That training was good, but can you re-train them?")

g. Net result - everyone's happy The L&D manager because his team has designed, developed and delivered a 'great learning experience'. The business manager because she has 'invested in her people' by organising training for them... but nothing happens.

h. How convenient

There is a significant challenge for L&D to evolve from this type of fulfilment service to trusted advisor."

Appendix V. Standardized evaluation questionnaire

The figure below shows the standardized questionnaire as currently in use at KBC for post event evaluation of classroom training. Air France/KLM Post Event Evaluation - Questionnaire Classroom training 2015

Course:
Learning Provider: Air France/KLM
Date:
Instructor:

Please help us improve our programmes by responding to this brief survey.

Email:

Respondent Information

1) In an effort to obtain a holistic view of training impact, we ask that you provide your manager's name so that we can survey them and gather their feedback. Feedback obtained from your manager is used to gauge overall training impact and is not used to measure individua performance. The data you provide is confidential and will not be shared with your manager.

2) Manager Name

3) Manager Email

Instructor											
Instructor -											
 The instructor was knowledgeable about the subject. 	Strongly Disagree 1 O	2 O	3 O	4)	5 O	6 0	7 •	8 O	9 O	Strongly Agree 10)	N/A O
 The instructor's energy and enthusiasm kept the participants actively engaged. 	1 0	2 O	3)	4 •	5 O	6 0	7 O	8 O	9 O	10 •	N/A O
Environment											
6) The physical environment was conducive to learning.	Strongly Disagree 1 O	2 O	3 O	4 0	5 O	6 0	7 O	8 O	9 O	Strongly Agree 10 O	N/A O
Courseware											
7) The scope of the material was appropriate to my needs.	Strongly Disagree 1 O	2 O	3 O	4 O	5 O	6 0	7 0	8 O	9 O	Strongly Agree 10 O	N/A O
Learning Effectiveness											
8) I learned new knowledge and skills from this program.	Strongly Disagree 1 O	2 •	3)	4 0	5 Q	6)	7 O	8 O	9 O	Strongly Agree 10 O	N/A O
Job Impact											
9) I will be able to apply the knowledge and skills learned in this program to my job.	Strongly Disagree 1 O	2 O	3 O	4 •	5 O	6 O	7 O	8 O	9 O	Strongly Agree 10 O	N/A O
 This program aligns with the business priorities and goals identified by my organisation. 	1 O	2 O	3)	4 O	5 O	6 •	7 O	8 O	9 O	10 •	N/A O
11) How much of your total work time requ 00% 010% 020% 030% 04	iires the ki 0% OS	nowledg 50%	ge and ski ⊃60%	ills learne 070%	ed in this (080%	orogram O 909	? % 0 1	.00%			
12) How much of this program do you plan	to use on	your jol	b?								

Q0% Q10% Q20% Q30% Q40% Q50% Q60% Q70% Q80% Q90% Q100%

Business Results											
13) This program will improve my job	Strongly Disagree	2	3	4	5	6	7	8	9	Strongly Agree 10	N/A
14) Given all factors, including this program	n, estimat	e how n	nuch you	r job perf	ormance	related	to the co	urse subj	ject matt	ter will im	iprove.
O% O10% O20% O30% O	40% 🔾	50%	○60%	◯70%	○809	6 Q 90	0% 01	100%			
15) This program will have a significant im increasing quality decreasing costs decreasing cycle time	pact on: (t □in □in □de	tick all th creasing creasing creasing	nat apply product sales g risk	/) ivity			□increa: □increa:	sing emp sing cust	oloyee sa omer sat	tisfaction tisfaction	I
Support Tools											
	Strongly									Strongly	
presentation handouts, job aids, etc.) will	Disagree 1	2	3	4	5	6	7	8	9	Agree 10	N/A
be useful on the job.	0	0	0	0	0	0	0	0	0	0	ò
17) My manager and I set expectations											
for this learning prior to attending this	1	2	3	4	5	6	7	8	9	10	N/A
program.	0	0	0	0	0	0	0	0	0	0	0
18) After this program, my manager and I will discuss how I will use the learning on		-			r		-		<i>c</i>	10	
my job.	1 O	0	3 0	4 O	ò	0	\circ	° O	9 0	10 O	N/A O
19) I will be provided adequate resources											
(time, money, equipment) to successfully apply this program on my job.	1 0	2 •	3 O	4 O	5 O	6 0	7 O	8 •	9 O	10 Q	N/A O
Return on Investment											
	Strongly									Strongly	
20) This program was a worthwhile	Disagree	2	3	4	5	6	7	8	9	Agree 10	N/A
What about this program was most use	eful to you	15									
	C 1.	2									
22) What about this program was least use	eful to you	12									
23) How can we improve the program to m	ake it mo	re releva	ant to yo	ur job?							
24) If you feel you will be successful in appl	ying this l	earning	please pi	rovide a f	ew tangi	ble exam	ples of h	ow you v	will apply	y it.	

Appendix VI. Description of oerproces per phase

This appendix shows the action descriptions of the oerproces as presented at the office of KBC. It can be seen as a kind of checklists with the general guidelines per phase to conduct the process.

<u>Intake</u>

- □ Alignment with AF learning centre
- □ Scheduling (phone) appointment
- □ Have meeting (using standard intake form)
- □ Talked to project manager from the business?
- □ Report Intake Summary to customer and AF including:
 - Evaluation plan and questions
 - □ "the way we work"; Dialogue & Design Session for expectations
- □ Update Learning Summary with: project-name, forecast status and costs

Guidelines:

-Perform the intake together with a colleague

- -Am I the most appropriate consultant for the intake?
 - -Who has done this before?
 - -Who has a passion for this topic?

Analysis of the learning request ("Dialogue & Design")

- □ Alignment with AF learning centre: invitation for collaboration
- □ If possible: invite (potential) internal or external supplier for collaboration during analysis phase
- Deepening with:
 - \circ Customer
 - (potential) trainees
 - trainee managers
 - if required: trainee customers and/or suppliers
 - if applicable: social workers of the team(s)
- □ Sparring with colleagues: internal or other L&D departments
- □ Administration of:
 - Rough design of learning solution/alternative to the customers
 - Including evaluation plan and evaluation questions
- □ Customer permission
- □ After customer permission:
 - Update learning summary

Guidelines:

-Am I the right person for this request? Who has done this before?

- -Am I working as fast as possible?
- -Perform the analysis together
- -Incorporate AF
- -It is allowed to say NO

Designing the learning solution

- Align with AF
- □ Design session with stakeholders
- Purchasing process including:
 - Check preferred supplier list
 - Call for tenders
 - Asses tenders
- Data collection for:
 - Cost and value determination
 - Cost allocation
 - o Operations
- □ Detailed offer for the customer (including agenda)
- □ Received approval, if applicable incorporate changes
- □ After approval:
 - Update learning summary: status, value, cost
 - Send tender to tender pt: title, vendor name, details

Guidelines:

-Agree on deadlines with the customer

-Actively ask (online) for help of colleagues

Execution

- □ Fill out logistics sheet and align with TCC
- □ Send Saba registration form to customer
- Send invitation to customer and other stakeholder (HR, TC, ...)
 Pay attention to evaluation in invitation
- □ Update learning summary: date, status
- □ Brief trainers, facilitators and actors
 - Pay attention to evaluation: determine criteria, announce evaluation during training

Guidelines

- -Are the trainees informed?
- -Do the trainees know why they received an invitation?
- -Do the trainees know they will receive a digital evaluation?
- -list of participants (Saba registration form) obtained by trainer/TCC
- -list of participants is signed off
- -list of participant is delivered to TCC after training

Administration

- □ Saba registration by TCC
- □ Entry in Metrics that Matter by TCC
- □ Check learning summary: select completed

Guidelines

-inform the manager of the trainees that the trainees will receive an evaluation form

Evaluation

- □ Send MTM including findings and advice to:
 - Customer (including a request whether they want a final meeting)
 - Trainees
 - If applicable: Other involved stakeholder
- □ Physical or telephonic meeting if requested by the customer
- □ Eventual follow up appointments
- □ Share lessons learned including success stories
- □ Clean digital database to make it accessible and understandable for others
- □ Communication? Where?

Appendix VII. Counting the concepts

This appendix shows how the concepts have been counted and how Table 29, Table 30 and Table 31 have been derived from Tables 19 till 28.

Step 1

The first step was to extract the concepts from the management information of the departments that shared their information elements.

Table Concepts derived from L&D management informa	tion departments 1, 2, 4 and 5
Concepts from comr	nunicated information
#	Employability (context of L&D resources)
\$	Employee
ф 0%	Evaluation
(Pa)Planning (contact of L&D administration)	Evaluation Exceeding (context of L&D recourse expenditure)
	Exceeding (context of delivering LOD resource expenditure)
ŧ	Execution (context of delivering L&D products)
Administration	Expenditure
Audience (context those with information needs)	External
Average	Facilities (context of L&D resources)
Billable hours (context of L&D operation)	Feedback (context of L&D products)
Breakdown (context of cost breakdown)	Function (context of role in L&D department)
Budget	Function (context of role in wider organization)
Business (context of L&D customer)	Goal (context of learning goal)
Cancellation (context of cancelled requested	Governance body (context of business, L&D needs
training)	customer)
Catalogue (context of L&D product portfolio)	Headcount (context of learners, employees, trainees)
Catalogue (context of LaD product portiono)	Hours [brs]
CFO (context audience)	HR survey
Client (context of L&D customer, trainee, learner)	Impact
Colleagues (context of employees, trainees,	In class learning
learners)	
Cost	Investment
Customer	L&D (without headers containing L&D)
Day	L&D products
	Lead-time (context of time for L&D product
Delivery (context of providing L&D products)	development and design)
Department (context of L&D department)	l earner(s)
Design (context of L&D product design)	
Design (context of L&D product design)	Learning Culture
Development (context of LaD product development)	
Development (context of metric development)	
Development (context of personal development)	Least (any context of ranking)
Effectiveness	Location (context of facility)
Efficiency/Efficient	Month
Effort (context of effort done by department)	Need(s) (context of L&D product needs)
Number	Subscription
Occurrency (contrast of class (many use of training)	Success rate (context L&D product delivered with
Occupancy (context of class/room use of training)	success/according to goals)
	Supplier (context of third party of L&D
Operation/Operating (context of L&D operations)	department/vendor)
Participants (context of Learner, employee, trainee)	Target (context of MI target)
Performance	Target (context of target group for L&D products)
Proferred (context of L&D product supplier/vender)	Technology Based Learning [TBL]
Processes (context of internal processes 190	
Processes (context of internal processes LaD	Time (any context)
Due duet(a) (se retaute af LOD rane duet)	
Product(s) (context of L&D product)	Top (context of ranking L&D products)
Productivity (context of non-productivity due to	Trainee (context Learner, employee, participant)
training)	
Program	Training
Project(s)	Training type/ Type of training
Purchased/Purchasing (context of L&D products or	Unallocated
	Llear (contact of user LMC)
Quality	
Quarter/Quarterly/Q	Value
Rate(s)/Rated	Vendor
Realize, realization (context of number of L&D	Virtual classroom [VC]
products produced/delivered)	
Request (context of learning request)	Web based training

Redesign (context of L&D products re-design)
Resources (context of time, money, HR in L&D)
Result(s)
Return on expectations (context of learning goals
have been achieved)
ROI
Satisfaction
Score(s)
Segment (context of type, category)
Service center (context of supportive roles in L&D
department)
Service time (context of time for L&D
administration/support functions)
Solution(s) (context of L&D products)
Spend (context of L&D resource expenditure (time,
money HR))
Spent

Step 2

The second step was to count the number of times the concepts occur within the tables. For this step word count in Word has been used in combination with Excel in which the data was stored. The figure below gives an illustration of how this data appeared.

concepts from communicated information	Nun	nber of time	Total times mentioned			
	MI 1	MI 2	MI 4	MI 5	Total Word Count	Sum
#	0	19	1	0	20	20
\$	7	0	0	0	7	7
%	8	45	0	3	56	56
(Re)Planning (context of L&D administration)	0	2	0	0	2	2
€	0	3	0	0	3	3
Administration	1	1	0	0	2	2
Audience (context those with information needs)	0	0	2	0	2	2
Average	2	1	0	1	4	4
Billable hours (context of L&D operation)	0	2	0	0	2	2
Breakdown (context of cost breakdown)	0	0	1	1	2	2
Budget	0	5	1	7	13	13
Business (context of L&D customer)	0	1	3	0	4	4

Figure Example of how the concepts were counted and assigned to an L&D department

Step 3

The third step was to identify whether a concept occurred at a certain department. Using the data from step 2 Excel could indicate whether it occurred (1) or not (0) in a certain department. The figure below provides an illustration of how this data appeared.

concepts from communicated information				
	Concept occurs in MI1	Concept occurs in MI2	Concept occurs in MI4	Concept occurs in MI5
#	0	1	1	0
\$	1	0	0	0
%	1	1	0	1
(Re)Planning (context of L&D administration)	0	1	0	0
€	0	1	0	0
Administration	1	1	0	0
Audience (context those with information needs)	0	0	1	0
Average	1	1	0	1
Billable hours (context of L&D operation)	0	1	0	0
Breakdown (context of cost breakdown)	0	0	1	1
Budget	0	1	1	1
Business (context of L&D customer)	0	1	1	0

 Business (context of L&D customer)
 0
 1
 1

 Figure Example of how the concepts were identified to occur at a certain L&D department

Step 4

The fourth step was to identify whether the concept occurred in only one or at more departments. Here the data of step 3 was used and the figure below provides the example of how the data appeared. The green colour shows in how many departments the concept could be found.

Concepts from communicated information	Concept occurs at 1	Concept occurs in 2	Concept occurs in 3	Concept occurs in
	department	departments	departments	all departments
#	0	1	0	0
\$	1	0	0	0
%	0	0	1	0
(Re)Planning (context of L&D administration)	1	0	0	0
€	1	0	0	0
Administration	0	1	0	0
Audience (context those with information needs)	1	0	0	0
Average	0	0	1	0
Billable hours (context of L&D operation)	1	0	0	0
Breakdown (context of cost breakdown)	0	1	0	0
Budget	0	0	1	0
Business (context of L&D customer)	0	1	0	0

Figure Example of how the concepts were identified to occur at multiple departments

Step 5

The fifth and final step was to combine the concepts that occurred more than once into tables showing the concepts occurring, twice, three times and four times.

#	Effectiveness	Learning management system [LMS]	Quarter/Quarterly/Q	Training type/ Type of training
Administration	Expenditure	Need(s)	Rate(s)/Rated	Unallocated
Breakdown	Function	Operation/Operating	Request	User
Business	Goal	Performance	Result(s)	Value
Delivery	HR survey	Program	Satisfaction	
Department	Impact	Project(s)	Target	Year
Development	L&D products	Purchased/Purchasing	Time	

%	Hours [hrs]
Average	Number
Budget	Product(s)
Category	Quality
Cost	Spend
Efficiency/Efficient	Tuningg
External	Trainee

Evaluation	
L&D	
Learner(s)	
Learning	
Score(s)	
Training	

Appendix VIII. Visualization prototype 2

Prototype 2 (the slides below) is based on the management information (system) of department 2.

Prototype 2: Management Information presentation



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Effort metrics

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	Effort metrics	
	KPI	Target 2015
-	realized number of requested training days	1500
20	Number of active users learning management system	1258
G	Satisfaction score training possibilities HR survey	33% > 8
	Evaluation satisfaction score participants	7.5
~	Non-productivity cost	€357.000
12	Purchasing advantage (discount)	€20.684
Efficie	Management & support functions ratio L&D department	1496
	Billable hours L&D department	80%
ş	Project-control developers and designers (projects exceeding pre- determined time, budget, goals, objectives)	< 15%
8	Number of quarters forecasted for development, design and execution	10
2	Administration time service centre per trainings day	60 min
	Time between training request and contact	75% < 3 days



2

Development and design metrics

Development and design metrics	Target 2015
Rolling forecast budget spending	Q1 Q2 Q3 Q4 Q2: 70% Q3: 50% 70% Q4: 50% 60% 70% Q1: 10% 50% 60% 70%
	Q3/4: estimated in 2016
Compliancy of projects with development standards	74%
Exceeding time and budget	<15% of the projects
Billable hours	80 % of total working hours
Redesign	17% of redesign projects to lower cost 10% of redesign projects to lower non-productivity

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Execution metrics

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	Current	Taroet 2015
Realization of requested learning solutions within available budget	80%6	90%
Employability of L&D resources (human and material)	62%	82%
% occupancy training	75%	90%
% no shows	5%6	< 5%
Number of cancellations	160	<100
Quality		
Average score HR Survey	7.2	7.5
Learners satisfaction score	7.5	8
Success rate (for training with exam)	83%	85%
Den dieta biliko		
Project time (request - current solutions - time to start training)		Max 10 weeks
Lead-time project (time to design) versus time of learning solution/training		30%
Number of re-planning of learning events caused by L&D department (mistakes, illness etc.)		< 5%
Planskillar		
Flexibility		

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Service centre metrics

Service centre metrics					
KPI	Nu	Target 2015			
% Use LMS		> 90%			
% Delivery according to standard		>85% on time			
Service time per training day		60 min			
% on-time project reports		>85%			
% on-time support incidents time and		>85%			
time to solution					
% on-time Publication in systems		>85%			

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Demand and Supply metrics

Demand and supply metrics					
KPI	Current	Target 2015			
Number of users in LMS	2500	+20%			
Number of available products in	125	200			
portfolio/LMS					
Number of executed training	245	300			
Growth target for number of		+8%			
coaching matches					
Growth target for number of		+8%			
professional pools					



Figure Prototype 2 example

Appendix IX. Main measures derived from the top-down

This appendix includes the main measures and their most important information. These measures are derived and selected using the top-down approach and the balanced score card.

Total cost of ownership						
Type of control	Diagnostic Interactive Strategic	Management layer	General, HR, EVP			
Objective/Subjective	Objective	Data source	Various financial data used by financial controller			

Formula:

Total yearly cost, direct and indirect, to operate the L&D department and provide the L&D products to the market.

Description:

This measure shows the total cost of operating the L&D department in one year.

Type and use of the measure:

This measure can be used as a lagging and leading measure. As a lagging indicator it can be used to diagnose whether the budget has been made. As a leading indicator it is a good measure for the budget in interactive and strategic control. Therefore the measure can be used for all three types of control, by all three layers of management.

Impact					
Type of control	Diagnostic Interactive	Management layer	General, HR, EVP		
Objective/Subjective	Subjective	Data source	Training evaluation		
Formula: Description: Total average score of the four levels This metrics shows the impact of learning in					

Total average score of the four levels of evaluation, with special attention to levels 3 and 4. Can be calculated per L&D product and total. This metrics shows the impact of learning in terms of how the customers evaluate the L&D product

Type and use of the metric:

This metric can be used as a lagging indicator. It can be used to diagnose the impact of L&D interventions through the eyes of the customers. Preferably impact should also be measured qualitative, for instance using the success case method, in order to tap the multiple dimensions of impact. The metric can be used for diagnostic control, by all three layers of management. For interactive control it can be used in the collaboration with the developers and designers to think about: what would happen to impact if a make this decision in the design process?

Long term impact						
Type of control	Diagnostic Interactive	Management layer	General, HR, EVP			
Objective/Subjective	Subjective	Data source	Training evaluation			
Formula: Description:						
Level 4 score of evaluation months after the intervent calculated per L&D product	on three ntion. Can be uct and total.	This metrics shows the i terms of how the custon product	mpact of learning in ners evaluate the L&D			

Type and use of the metric:

This metric can be used as a lagging indicator. It can be used to diagnose the impact of L&D interventions through the eyes of the customers, three month after the intervention. Preferably impact should also be measured qualitative, for instance using the success case method, in order to tap the multiple dimensions of impact. The metric can be used for diagnostic control, by all three layers of management to see the effect of L&D on the long term. For interactive control it can be used in the collaboration with the developers and designers to think about: what would happen to impact if a make this decision in the design process?

Net promotor score					
Type of control	Diagnostic Interactive	Management layer	General, HR, EVP		
Objective/Subjective	Subjective	Data source	Currently not evaluated		
Formula:Description:Average score between one and tenThis metrics shows the customer loyalty of					

Average score between one and ten on the question: *How likely is it that you would recommend KBC to a colleague?* This metrics shows the customer loyalty of KBC's customers. It is an indicator for how likely the customers will again chose the L&D department when they have a learning need.

Type and use of the metric:

This metric can be used as a lagging measure. It can be used to diagnose the customer's intention to promote the L&D department and use it for his next learning need. The metric can be used for diagnostic control, by all three layers of management to see how well the department is performing through the eyes of its customers. For interactive control it can be used in the collaboration with the employees involved in L&D to think about: what would happen to the NPS if a make this decision in my work?

Customer satisfaction score					
Type of control	Diagnostic Interactive	Management layer	General, HR, EVP		
Objective/Subjective	Subjective	Data source	Currently not evaluated		
Formula: Average score between one and ten on various satisfaction questions		Description: This metrics shows the co KBC's customers.	ustomer satisfaction of		

Type and use of the metric:

This metric can be used as a lagging indicator. It can be used to diagnose the customer satisfaction about the L&D through the eyes of the customers. The metric can be used for diagnostic control, by all three layers of management to see the customer satisfaction about the operation of the L&D department. For interactive control it can be used in the collaboration with the employees involved in L&D to think about: what would happen to the satisfaction score if a make this decision in my work?

Staff survey score: satisfaction with L&D opportunities					
Type of control	Diagnostic Interactive	Management layer	General, HR, EVP		
Objective/Subjective	Subjective	Data source	Yearly staff survey		
Formula:		Description:			
Average score satisfaction with learning and growth opportunities		This metrics shows the customer satisfaction of the learning and growth opportunities offered in the commercial division.			

Type and use of the metric:

This metric can be used as a lagging indicator. It can be used to diagnose the customer satisfaction about the provided learning and growth opportunities through the eyes of the customers. The metric can be used for diagnostic control, by all three layers of management to see the satisfaction. For interactive control it can be used in the collaboration with the employees involved in L&D to think about: what would happen to the satisfaction score if a make this decision in my work?
Manager support L&D				
Type of control	Diagnostic Interactive Strategic	Management layer	General, HR, EVP	
Objective/Subjective	Subjective	Data source	Training evaluation	
Formula:		Description:		
 Scores on: My manager and I set expectations for this learning prior to attending this program. After this program, my manager and I will discuss how I will use the learning on my job. 		the learning and growth opportunities offered in the commercial division.		

Type and use of the metric:

This metric can be used as a lagging indicator. It can be used to diagnose the learner's satisfaction about the managerial support in his development. The metric also says something about how well the managers are involved in the development of their employees. The metric can be used for diagnostic control, by all three layers of management to see the satisfaction with managerial support. For interactive control it can be used to think about: what would happen to the support if a make a certain decision? In strategic control je metric can be used to monitor the answer on the question: What can we do to increase managerial support of L&D?

Alignment of the intervention/L&D goals with the			
	busi	ness goals	
Type of control	Diagnostic Interactive Strategic	Management layer	General, HR, EVP
Objective/Subjective	Subjective	Data source	Combination of Training evaluation, strategic statements, intake forms, and L&D product design
Formula: Alignment is not to be calculated, it's a pure qualitative measure		Description: Alignment means how w aligned with the busines registration, argumentat both in order to assess l aligned.	vell the L&D goals are is needs. It requires tion and explanation of now well these two are

Type and use of the metric:

This metric can be used as a lagging and leading metric measure. As a lagging metric it identified how well the already produced and provided products align with the business. As a leading indicator it presents how much the L&D product align with the expresses business needs. It gives argumentation for the three layers of management to make certain decisions, even strategic ones. If an L&D product is well aligned it makes more sense to do certain investments, rather than an L&D product which designed and provided without an L&D need from the business perspective.

Average time to conduct oerproces				
Type of control	Diagnostic Interactive Strategic	Management layer	General	
Objective/Subjective	Objective	Data source	Currently not measured	
Formula:		Description:		
Total time to conduct the six steps of the oerproces according to the process standards		The total time requires from intake till learning intervention provides insight in how quick KBC can react, how long customers wait and how much time in spent on developing a product.		

Type and use of the measure:

This metric can be used as a lagging and leading metric measure. As a lagging metric it identified much time it took to perform the process. As a leading indicator it presents how much time it will cost to design and provide the L&D product. The measure can be used for diagnostic control, by the general manager to see how employees allocate there time. For interactive control it can be used to think about: what would happen to the total time if we make a certain decision? In strategic control je metric can be used to monitor the answer on the questions like: What can we do to increase the speed of our work? What can we do to increase the time to competence?

Average cost to conduct oerproces			
Type of control	Diagnostic Interactive Strategic	Management layer	General, HR, EVP
Objective/Subjective	Objective	Data source	Currently not measured/financial data
Formula: Total cost to conduct the six steps of the oerproces according to the process standards		Description: The total cost to conduct basically another way to of ownership. It can sho	ct the oerproces is o allocate the total cost ow the difference

Type and use of the measure:

This measure can be used as a lagging and leading measure. As a lagging indicator it can be used to diagnose whether the budget has been made. As a leading indicator it is a good measure for the budget in interactive and strategic control. Therefore the measure can be used for all three types of control, by all three layers of management. Combined with the TCO, this measure also show how much of the total cost can be allocated to the core process.

are other cost.

between what is spent as process cost and what

Projects conducted completely according to the oerproces guidelines			
Type of control	Diagnostic Interactive Strategic	Management layer	General
Objective/Subjective	Objective (if guidelines are clear)	Data source	Currently not measured
Formula: (#Project completed following the guidelines/#Total projects)*100%		Description: This metric depicts how department operates acc	well the L&D cording to its own

Type and use of the measure:

This metric can be used as a lagging measure by the general manager to evaluate how well the department and employees operate according to their own standards. In this way it can be used for all three types of managerial control.

standards and guidelines

Completed evaluation form compared to target group			
Type of control	Diagnostic	Management layer	General
Objective/Subjective	Objective	Data source	Learning management system/evaluation data base

Formula:

(#Evaluations completed /#send evaluations)*100%

Description:

This metric depicts how reliable the results of evaluation are, gives the large role of evaluation results in management information

Type and use of the measure:

This metric can be used as a lagging measure by the general manager to evaluate how reliable the evaluation results are. This is important since much of the management information aiding in decision making is based on the evaluation data.

Accuracy and reliability of the various data bases			
Type of control	Diagnostic	Management layer	General
Objective/Subjective	Objective	Data source	Learning management system, evaluation data base, financial data and other desired sources
Formula: Objective sample test of the reliability of the various data bases		Description: This metric depicts how reliable the data sources used to construct management information are.	

Type and use of the measure:

This metric can be used as a lagging measure by the general manager to evaluate how reliable the used data sources are. This is important since much of the management information aiding in decision making is based on the various data. If the data is not accurate, up to date, or reliable, once should not base decisions on the constructed information