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Knowledge Management and Logistics: An Empirical Evaluation

Gaby Neumann

(Otto-von-Guericke-University of Magdeburg, Germany
gaby.neumann@mb.uni-magdeburg.de)

Eduardo Tomé

(Instituto Superior de Serviço Social, Beja, Portugal
eduardo.tome@clix.pt)

Presentation Overview

- KM and Logistics: The Situation
- KM and Logistics: The Evaluation
 - The basic models
 - Structure and relevant questions of the study
 - Defining knowledge management
 - Defining needs for investment in knowledge
 - Defining knowledge impacts
 - Implementation of the study
- Current Stage, Expected Results

Knowledge Management and Logistics: The Situation

- Logistics is the planning, execution and control of the movement and placement of people and/or goods and of the supporting activities within a system organized to achieve specific objectives. [ELA 2004]
- Logistics is a knowledge-intensive area with regard to
 - Collaboration between human resources in supply chains
 - Creative problem solving in logistics planning
 - Team building in logistics planning and operation
 - Education and training needs and requirements
- Knowledge Management has not yet been implemented in logistics businesses in large scale

A Related Study

- Baumgarten & Thom (2002): Knowledge Management in Networks (in: Trends and Strategies in Logistics)
- There are KM champions in logistics characterized by
 - integration of KM in the organization
 - existence of K-managers
 - knowledge exchange and knowledge sharing
 - assessment and evaluation of KM initiatives
- KM champions in logistics
 - 2002: 80 % of them were in the phase of KM implementation and use
 - 2005: 40 % of them expected to deal with KM optimization
- Top 5 challenges in implementing KM
 - Financial limitations
 - Time restrictions
 - Insufficient structuring and presentation of knowledge
 - Missing transfer into practice
 - Methodical misconceptions

Knowledge Management and Logistics: The Challenge

- Acceptance problems of KM in logistics
- Slack implementation of KM into planning, operation and management of logistics services
- Deficits in measuring the success of knowledge management initiatives (in logistics companies)
 - Costs vs. benefits?
 - Impact on (logistics) performance?
 - Needs for further changes?

Knowledge Management and Logistics: The Evaluation

- Type of study: impact study and not a case study
- Sets of companies:
 - Two sets of comparable companies: one using KM, the other not
 - These sets cannot be defined beforehand in the logistics sector
 - Therefore clustering on the basis of feedback
- 3 stage design of the study:
 - Stage 1: limited sample, Portugal and Germany, feedback
 - Stage 2: leading companies Portugal and Germany
 - Stage 3: extend the investigation to other European countries
- Method of data collection: questionnaire

Objectives of the Study

- Find out what is the practice of KM in the logistics sector
- Develop a model to assess the impact of KM on a company's logistics performance
- Assess the impact of KM on a company's logistics performance considering
 - cultural specifics,
 - economic environments, and
 - organizational diversity
- Identify how KM may improve a company's logistics performance

Data

- Measurement of the investments on KM that are being made in the logistic sector
- Assessment of the needs for KM in the logistic sector
- Definition of the impact that the investments in KM have on the logistic sector

Basic Models

- Evaluation of KM and IC
- Models:
 - Skandia Navigator by Edvinsson and Malone
 - Intangible Assets Monitor by Sveiby
 - Balanced Scorecard by Kaplan and Norton
- Questions:
 - How to define “intellectual” assets?
 - How to define its impacts?

*Just because knowledge is intangible
this does not mean that its impact is.*

Basic Models

- Important practical applications:
 - North and Hornung 2003
 - North, Reinhardt and Schmidt 2004
- Specific needs for knowledge:
 - How to define the need for knowledge?
 - Knowledge audit - Reinhardt 2003
- Logistics and KM:
Investments, needs and impacts

The Questionnaire – Part 1

- Identify the **type of logistics business activities** the company is running or involved in – avoid to relate a transportation service provider to a consultant...
- **Describe the company** in terms of number of workers, sales volume, economic sector, productivity, and other **economic and social relevant characteristics**
- Group companies according to their **general understanding of knowledge and knowledge management**

The Questionnaire – Part 2

- **Investments** on selected parts of knowledge activities
- **Priority level** of companies accessing those investments
- **Changes on companies' performance through KM**

Specifying Investments in KM

- General idea:
 - Not asking for investments into knowledge management systems and IT infrastructures, but into **people and human resources only**.
 - Portals, databases and intra- or internet → common standard in logistics companies. Focus strongly put on knowledge management activities influencing a **company's culture**.
 - Rely on the good faith of the respondents
- Basis: year 2004
- Scale: 0...5
 - 0 - none
 - 1 - very low
 - 2 - low
 - 3 - medium
 - 4 - high
 - 5 - very high

Specifying Investments in KM

- 16 Items:
 - formal training, informal training, and self training
 - hiring of consultants
 - communities of practices
 - meetings with labor psychologists
 - R&D activities, innovation practices, and practices related with creativity
 - meetings with invited experts
 - participation in workshops, conferences and congresses
 - study visits to other companies, laboratories or cultural sights, study of best practices
 - participation in external networks of knowledge transfer, establishment of internal networks of knowledge sharing and knowledge transfer, development of informal social networks

Defining Needs for Investments in Knowledge

- **Need = Priority – Frequency**

Frequency: investments as specified

Priorities: what should be the frequency of access (scale, items, year analog to specification of investments)

- Important need

→ level of priority higher than level of investment

- Not urgent need

→ level of priority lower than level of investment

- Indirect definition of “needs”

→ less naivety, more truthful

- Usefulness: Where to invest in the near future ?

Defining Knowledge Impacts

- *Basic idea from microeconomics*
- Standard formula:

$$Y = aX + bKM + e$$

Y - outcomes or consequences from the investments

KM - investment variables

X - control variables

e - statistical error and non-observable variables

b - impact of KM in Y

Application to the Present Case

- $Y = aX + bKM + e$

KM - defined by the 16 variables as specified

Y - defined by the evolution of a large set variables included in the questionnaire (financial outcomes, operational aspects, customer satisfaction, strategic and structural factors that describe the company)
(The evolution of those variables should represent the **evolution of a company** in any moment of time)

- asked indirectly: situation **after** (2005) the investment reduced by situation **before** (2003) the investment

X - related to the company characteristics and to the perceived importance of knowledge in each company. The questionnaire contains 12 small questions on this topic.

a, b - calculated

Expected Results

- a **set of tables** on the 16 variables representing investment specified by sub-samples (country, type of company, main business, dimension)
- the same on the needs of KM, represented by the same variables
- the **impact of KM on the Logistics sector, crossing investments with impacts, for each sub-sample**

Implementation of the Study

- Participants:
 - German and Portuguese companies attaching themselves to the logistics sector
 - Logistics service providers or logistics departments of big companies
 - Preferably no global players, but orientation towards regional and national markets
 - Sample selected from the 100 logistics companies in the respective country as identified by Klaus (2003)
 - Support by the German and Portuguese Logistics Associations

- Step 1:
 - Evaluation of the questionnaire by chief logisticians in 5 companies per country

- Step 2:
 - Running the study with the full sample

Current Stage

- Feedback from evaluating the questionnaire (step 1):
 - strong interest in the study
 - need for providing companies with feedback (e. g. benchmarks)
 - requirements for specifying terminology such as knowledge, KM, etc.
 - different parts of the questionnaire to be responded by different positions in a company
 - parts I, II, V => the company's chief logistician
 - parts III, IV => the company's human resource manager
 - impacts are difficult to measure; different scales required for different groups of variables

Conclusions

- "That what can be measured should be measured; that what cannot be measured needs to be made available for measuring."

Galileo Galilei

- "Having been some days in preparation a splendid time is guaranteed for all"

Lennon and McCartney