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FRAUNHOFER INSTITUTE FOR MATERIAL FLOW AND LOGISTICS IML

MARKETSTUDY: »CLOUD COMPUTING FOR LOGISTICS« – ACCEPTANCE OF THE LOGISTICS MALL

logistics mall

aided by:

Ministerium für Innovation,
Wissenschaft, Forschung und Technologie
des Landes Nordrhein-Westfalen

INNOVATIONSPREIS-IT
KATEGORIESIEGER
2011
initiative mittelstand
CLOUD COMPUTING

logistics mall

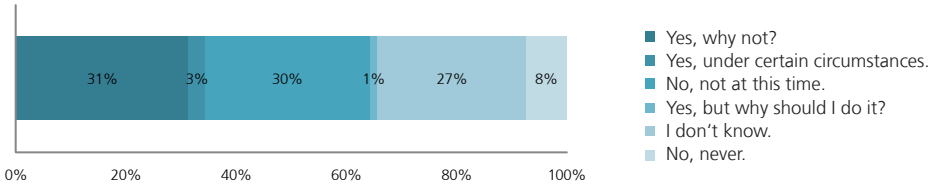
Innovation cluster «Logistics Mall – Cloud Computing for Logistics»

The requirements described here are adapted from the research of the Fraunhofer innovation cluster »Logistics Mall – Cloud Computing for Logistics«, which was developed together by the Fraunhofer Institute for Material Flow and Logistics (IML) and the Fraunhofer Institute for Software and Systems Engineering (ISST). The Logistics Mall is both an electronic market place for logistic IT applications, services, and processes and a customizable platform for using products in the cloud. In three steps, the project team developed technology components for automating the provision of logistic applications and services in the cloud as much as possible. The result is that a customer can rent an application in the Logistics Mall, which is immediately available and useful for them.

Research and development responsive to the needs of the market

Under which circumstances are the logistic and IT managers of companies prepared to use logistic software that no longer runs locally on computers at their company but instead is distributed across server systems in the Internet? This was the central question of Fraunhofer IML during the analysis of the requirements of 70 decision makers from the sectors of logistics services, wholesale/retail, and industry. The results clearly show the spirit of innovation of German managers: 64% can already imagine renting logistics software via cloud computing.

Can you imagine using logistics software that is not running locally on computers at your company but instead on servers in the Internet?



Only 8% of those surveyed (only 4% of the logistics service providers) cannot imagine their company doing it. The largest percentage of the companies surveyed (27% in total) selected the category "No, not at this time" and would like to wait until the technology had been further developed.

The diffusion of innovations: successive adoption of newer technologies

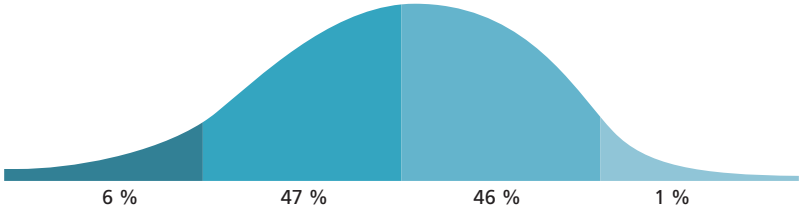
The initial reservations correspond to the expectations defined at the beginning of the project. According to the sociological model developed by Joe M. Bohlen, George M. Beal, and Everett M. Rogers at Iowa State College, new technologies do not spread quickly. In fact there are always people who are open to new innovations and there are also those who shy away from the risks and only use mature products. Using this approach as the basis, Geoffrey A. Moore defined the *Technology Adoption Life Cycle*. Both models divide the adopters of innovative products into five groups:

- The *Innovators* actively look for innovations and are willing to test the technology themselves. They are only a fringe group but their feedback is very important for the developers.
- The *Early Adopters* are able to recognize the economic potential early on and are not as interested in the technological side of the products. They are willing to take a risk because of the economic benefits.
- The *Early Majority* would rather wait until the product is mature and the price has come down.
- The *Late Majority* only act when their competitiveness is threatened by the technological advancement of their competition.
- There is one final small group who condemn each technological advancement, the so-called *Laggards*.

It was not possible to contact anyone from the last group so a Technology Adoption Life Cycle of the future users of the Logistics Mall was created for the first four groups.

When viewed over a period of time, it became clear that every second respondent is generally ready very early to change their views and use new technologies such as the Logistics Mall.

How would you describe your companies attitude towards innovations?

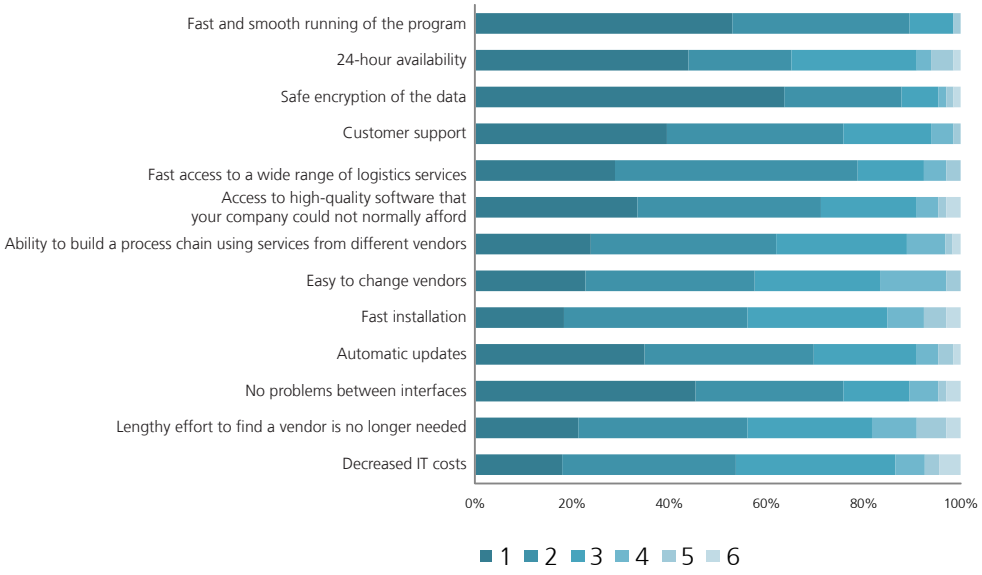


- We search actively and buy immediately to be the first, who work with it
- We try to identify the economic potential early and buy despite of high prices and risks
- We wait until the product has a favourable price and is fully developed
- Investment only if absolutely essential

Performance, security, and compatible interfaces – clear requirements for the cloud computing concept for logistics

The question remains: How to design the Logistics Mall so that it offers added value to the later users. To help answer this question, the respondents were asked to rate the importance of several aspects of the concept:

How important are the following aspects of the Logistics Mall?
Please give them a rating between 1 (very important) and 6 (not important).



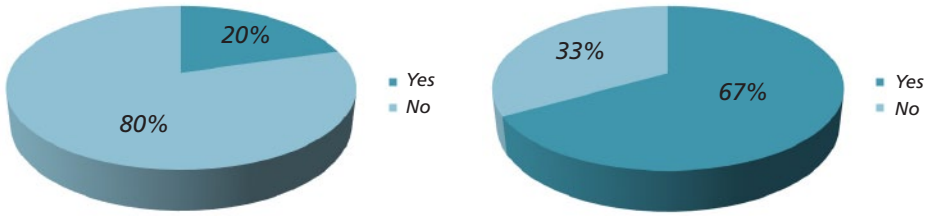
The ideal Logistics Mall should ensure a secure encryption of data transfer (very important: 65%) and guarantee that programs run quickly and smoothly (54%) and are available at all times (45%). These results make sense since logistics processes are critical processes for a company: they involve the flow of highly sensitive data and all of the processes must be compatible with each other.

The interface problems between the different systems used along the Supply Chain are clearly viewed as a real problem by the respondents. 75% of the respondents desire a significant improvement in this area. For this reason, the Fraunhofer Institute for Material Flow and Logistics (IML) and the Fraunhofer Institute for Software and Systems Engineering (ISST) are currently developing semantic models for describing logistics processes as part of the research work of the innovation cluster "Logistics Mall – Cloud Computing for Logistics". Their goal is to establish a new standard that will facilitate the complete compatibility of IT solutions on all levels.

Outsource IT or logistics processes? A question of trust.

Not all of the respondents see the advantages in the flexibility and cost savings that result from outsourcing. Small and medium-sized enterprises (SMEs) still hesitate to outsource processes to external service providers.

Do you already have experience outsourcing logistics and IT services?

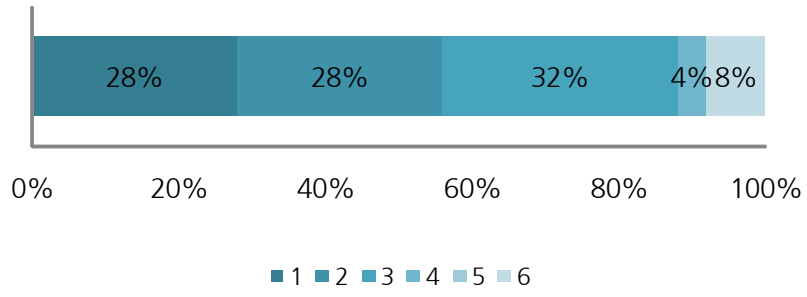


SMEs (employees <250 and revenue <€50 million)

Large companies (employees ≥ 250 and revenue ≥ €50 million)

Of those companies who had already had some experience outsourcing services; 56% of the respondents indicated that they were happy or very happy with this model; 32% gave the rating of "satisfied"; and only 8% reported that they were completely unhappy and gave it the worst rating possible.

How happy are you with your outsourcing experiences (from 1 very happy to 6 completely unhappy)?

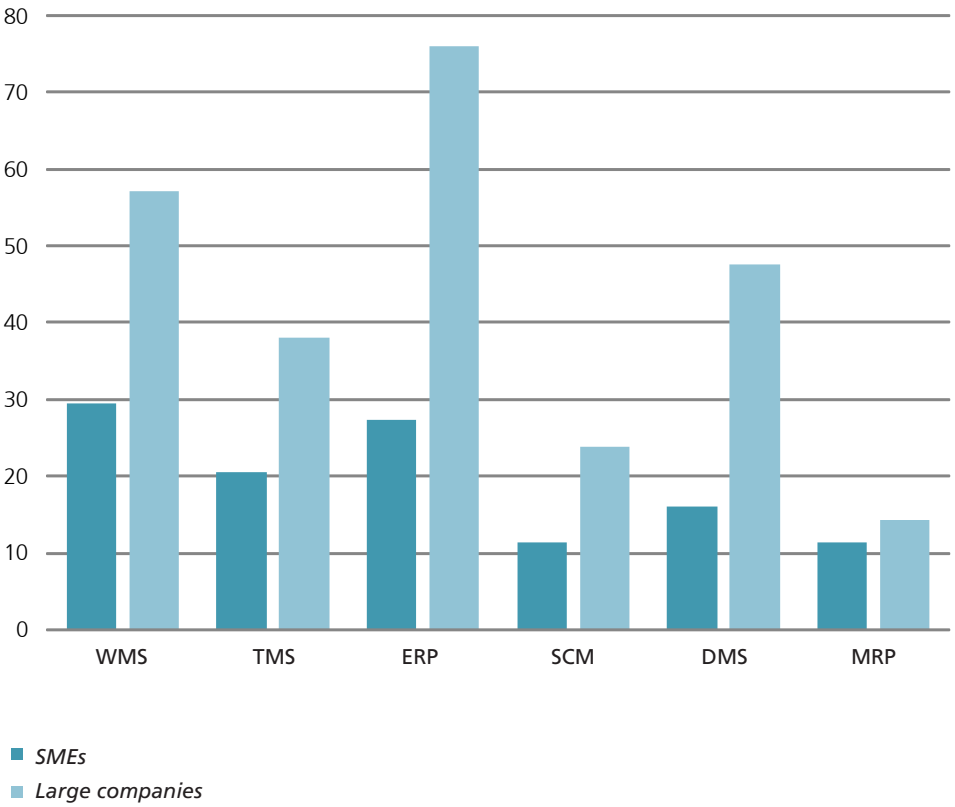


What is tried and tested for large companies can also be good for small and medium-sized enterprises: IT outsourcing helps SMEs concentrate on their core competencies and thus save costs. However, the benefits and risks have to be analysed frequently.

Size dependent equipment with logistics software

Compared to the large companies, the SMEs surveyed indicated that their logistics software infrastructure is much poorer, as shown clearly in the figure below. The largest discrepancy is seen in the use of intercompany ERP systems (SMEs 27%, large companies 76%) but the control and management of warehouses and distribution centres with a Warehouse Management System (WMS) is currently only used in around 30% of the SMEs. To compare: 57% of the large companies surveyed use a WMS.

Which of the following logistics software does your company currently use?



The Logistics Mall concept meets the requirements of the market

SMEs in particular are still lagging far behind in software support for logistics processes. These types of companies can barely afford the high-quality solutions. In addition to this, the resource-intensive implementation times and the interface problems between the systems place enormous demands on the expertise of the IT and logistics specialists.

The problems between the interfaces are also a reality for the large companies. Although the biggest opportunity for a Logistics Mall here is more in the possibility of making the fixed IT costs variable. By using hybrid cloud architecture – systems that integrate private and public clouds as well as traditional IT environments – management can react very flexibly to business processes that are constantly getting faster. However, first a new standard has to be developed for the ontological definition of logistics processes and their formalization. This standard will facilitate a common understanding between customers and service providers, which is key for defining the abstract interfaces between the logistics IT services. After this standard has been defined, it will be possible to make logistics IT services available via a platform and allow these services to be used to create individual process chains and to be run in a cloud.

As this market study "Cloud Computing for Logistics – Acceptance of the Logistics Mall" proves, there is enough openness in the market for a change in views on the demand-oriented provision, procurement, and use of logistics software. Now it is the researchers and developers turn to provide an adequate technological answer to the concerns about possible safety and performance risks.

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