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Improving E-Learning in SMEs through Cloud Computing and Scenarios

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Abstract

Small and medium sized enterprises (SMEs) assure economic growth in Europe. Generally, many SMEs are struggling to survive in an ongoing global recession and are often reluctant to release or pay for staff training. E-Learning has tried to address issues of time and cost in SMEs, by allowing employees to access learning resources remotely, but its use in SMEs is not efficient. Cloud Computing offers many opportunities and could help companies to improve their business and use technology more efficiently also for E-Learning. In addition to Cloud Computing, Scenario-based E-Learning introduces the learners to real-life situations close to their business allowing them to gather skills or information for future use, and also improves Learners' engagement and motivation to understand core concepts like the Cloud.

In this chapter, learning methods particularly E-Learning in European SMEs is described in part 1. The advantage of using Cloud Computing in E-Learning including models of cloud architectures for E-Learning are presented in part 2 and Scenario-based E-Learning in part 3. In part 4, examples and conclusions are given.

Keywords: SME, E-Learning, Cloud Computing, Scenarios, ICT

1. Introduction

Small and medium sized enterprises (SMEs) assure economic growth in Europe. In the European Union 28 (EU28), in 2013 some 21.6 million SMEs employed 88.8 million people and generated 3.666 trillion in values added [1]. The financial crisis and the economic recession

have hit SMEs hard in the EU28 and the economic conditions remain difficult. Many of these companies are micro enterprises, have few resources, and difficulties in facing technological, economic, and financial changes.

Generally, many SMEs are struggling to survive in an ongoing global recession and are often reluctant to release or pay for staff training. Research has highlighted the role of training and skills development on business success. However, in difficult times training budgets are often the first to be reduced or removed. This is often because owner/managers of SMEs do not have enough knowledge about the long-term value of training in sustaining competitive advantage and about suitable, efficient, and chip learning solutions.

E-Learning has tried to address issues of time and cost in SMEs, by allowing employees to access learning resources remotely. The learning material is easy to keep updated; the trainers can integrate multimedia content which facilitates understanding and motivate the participants, but this form of learning is not used efficiently in SMEs. Some disadvantages of E-Learning could be its weakness on scalability at the infrastructure level; inefficient utilization of resources during the night and holidays; cost related to computer maintenance, installation, and technical support for individual software packages.

Cloud Computing offers many opportunities and can help companies improve their business and use technology more efficiently also for E-Learning.

Marston et al. [2] define Cloud Computing as "an information technology service model where computing services (both hardware and software) are delivered on-demand to customers over a network in a self-service fashion, independent of device and location."

Agility, elastic scalability, low costs are some benefits of using Cloud Computing; data can be moved smoothly without boundaries. Cloud platforms are an alternative to traditional computer centers. Cloud can be viewed as being Education Software as a Service. The learning resources could be accessed anywhere and anytime, costs for software installation and maintenance are reduced, SMEs can pay by subscription based on usage of learning resources, etc.

In addition to Cloud Computing, Scenario-based E-Learning introduces learners to real-life situations close to their business allowing them to gather skills or information for future use. There are many reasons why scenarios help to improve learners' engagement and motivation and to understand core concepts like the Cloud.

In this chapter, learning methods and the use of blended learning and particularly E-Learning in European SMEs are described in part 1. The advantages of using Cloud Computing in E-Learning including models of cloud architectures for E-Learning are presented in part 2 and Scenario-based E-Learning in part 3. In part 4, examples and conclusions are given.

2. SMEs in Europe

Different countries and sectors define SMEs differently and there are many classifications for different fields [3] with regard to employment, sales, or investment [4]. So there is no common

definition for SME at present. The European Commission has developed criteria for SME [3] including employee numbers, turnover, and balance sheet statistics [5], which make an equal consideration possible.

2013 could be considered a turning point for European SMEs [1]. After years of an uncertain economic situation, 2013 is the first year with combined increase in employment and value-addition in European SMEs.
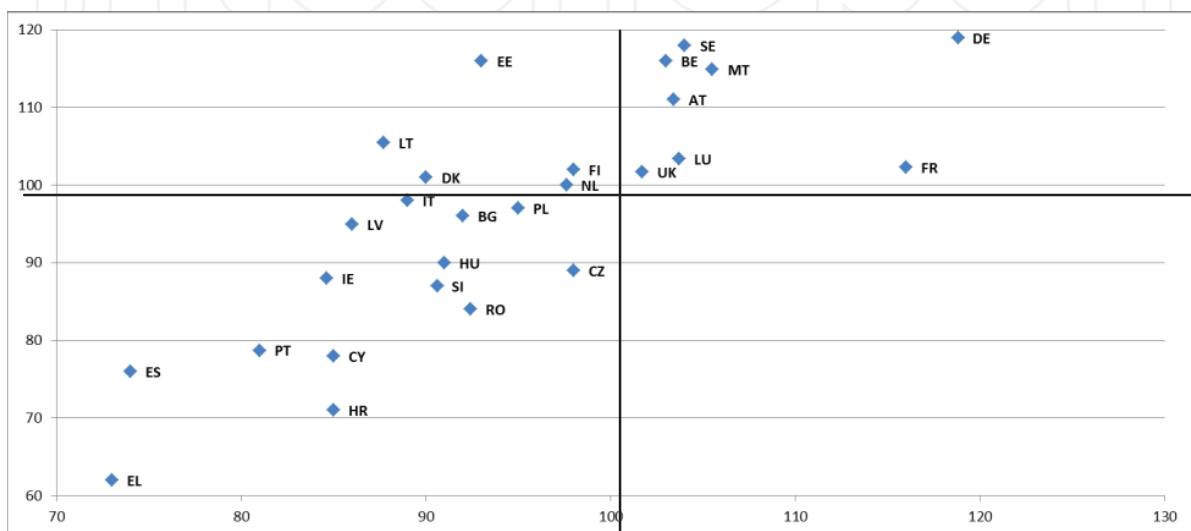
Figure 1 shows the degree of recovery of SMEs from 2008 to 2013.

Figure 1. SME degree of recovery from 2008 to 2013, value-addition and employment [1]

It is known that the current business SME environments are characterized by increasing competition and the day-to-day pressure of running an efficient enterprise. Low demand for the goods and services, which SMEs produce, explains why the SMEs' performance did not reach previous values in some member states.

The most important SME sectors are the wholesale and retail sectors and the largest ones are manufacturing, construction, accommodation, and food. In 2013, positive growth was reported in business services, retail and wholesale trade; the construction industry has suffered severely.

Many SMEs are not in export-oriented sectors, particularly the micro and small enterprises. Generally, many SMEs are struggling to survive in an ongoing global recession and are often reluctant to release or pay for staff training which can improve staff competences and contribute to improve this situation.

In all companies, also in SMEs, computing became more pervasive within the organization; the complexity of managing the whole infrastructure of heterogeneous information architectures and distributed data and software increases the costs for computing in organizations. For small and medium businesses with limited capital and cash flow, it is difficult to afford investments for Information and Communication Technologies (ICT) infrastructure. So Cloud

Computing promises to deliver all the functionality of existing information technology services, reducing the upfront costs of computing that hinder many organizations in deploying new innovative IT services [6].

3. Learning in SMEs

The economic pressure requires continuous improving of company efficiency, of staff knowledge, of training and learning to survive or stay competitive. Due to limited resources, often financial ones, the managers reduce learning activities and the introducing of new technologies in their companies. E-Learning is rarely used in SMEs, although it is suitable to quickly and up-to-date the requirements typical for SMEs [7], [8].

Some managers, who do not know the advantages of E-Learning, would like to preserve instructor, classroom-based learning as the learning culture of the company. Managers and staff should be aware of integrating training/learning in the company business contributing to their growth. Figure 2 shows some important variables reported in the literature contributing to a better understanding of the role of training and education for SMEs in order to compete nowadays.
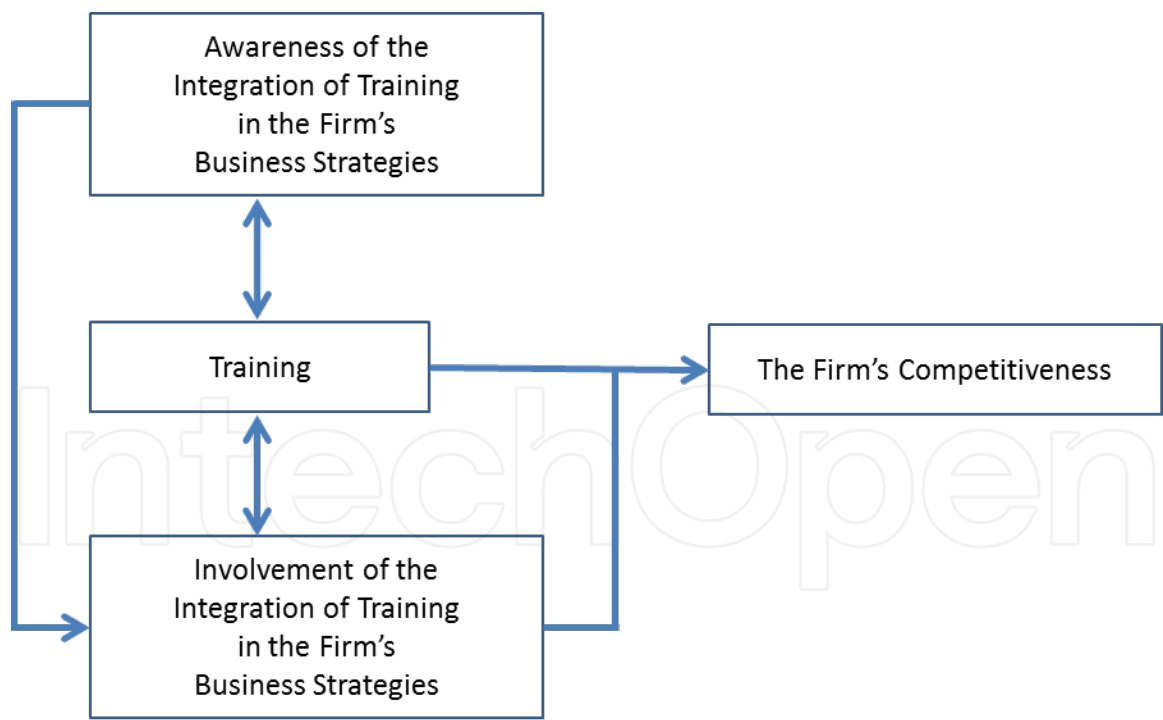

Figure 2. Variables for training [9]

With regard to learning, the most popular form of learning in SMEs among staff is the informal one, which accounts for over 75% of the learning taking place in organizations today. Informal learning is the unofficial, unscheduled, impromptu way people learn to do their jobs. Most

learning does not occur during formal training programs. It happens through processes that are not structured or supported by an employer or an organized formal course. Most companies, however, focus on and recognize only formal learning programs, losing valuable opportunities and outcomes.

Blended learning can combine the positive aspects of different learning approaches, classroom-based learning and E-Learning, formal and informal ones [7]. By mixing learning styles and different dimensions of learning suitable for SMEs at the course level, the use of blended learning opportunities as a suitable way to learn in SMEs could be improved so that this increases or keeps up competitiveness/survival of the companies.

The term blended learning is used in the literature for an integrated combination of traditional offline methods of learning with on-line methods (i.e., web-based ones) [10]. Within blended learning, classroom-based learning is combined with computer-mediated instructions [11], but also various event-based activities (face-to-face classrooms, live E-Learning, self-paced learning) are combined.

Results of projects show that SMEs are restricted in the efficient use of different forms of learning and technology for learning and in adequate management learning approaches [12].

An informal and predominant training method, workplace training for daily tasks, is known to have "low learning cost" [13]. The integration with formal strategic training is often not planned. Also the blending of face-to-face training with self-paced E-Learning is not efficiently used [14].

Some important aspects of blended learning for SMEs could be Self-Paced Learning, Mix of Methods and Media, Quality, Time Flexibility, Learner-Centred, Motivation, Flexibility, Accessibility, and Workplace-Related Learning.

The trainees have the possibility to choose when they study; distance and schedules becoming irrelevant. The students are not required to take into account each other's time restrictions; they can also choose content necessary to their tasks. In some projects like SIMPEL [7], coordinated by the author, the use of E-learning in SMEs has been particularly analysed. The conclusions were that properly developed training based on E-Learning not only contributes to improving competences of SME staff, but also to create a growing repository of knowledge. This knowledge can be continuously provided to employees at a determined time and in a way that can be individualized, to be more efficient. E-Learning has a great potential for the expansion of educational opportunities but it is also necessary to note that "social presence is a strong enabler of satisfaction also in a computer conference" [14].

Results of the EU ARIEL project (Analysing and Reporting on the Implementation of Electronic Learning in Europe www.ariel-eu.net), [15], financed within the E-Learning initiative and coordinated by the author, show that SMEs have problems in introducing and using E-Learning. Problems that appear relate to organizational technology and human resource development.

Some models of the E-Learning are cited by Psycharis [16], [17].

In the publication of Rosenberg [18], four factors are identified: Culture, Champions, Communications, and Change. Twenty questions to classify the factors in categories were developed by him.

The main factors identified by Chapnick [19] are: the psychological readiness, the sociological readiness, the environmental readiness, the readiness of the human resources, and the economic readiness.

According to Broadbent [20], the successful implementation of E-Learning in an organization requires the right people, the right place, and the right resources.

From the author's point of view, learning refers less on the basis of technical implementation, but more on the need of organisation development and organisational integration. Some important issues when applying the models to SMEs are as follows:

• A decision should be made whether this is the best choice of training delivery or not.

• Special pedagogical requirements and face-to-face contact have to be considered.

• Organizational readiness is a difficult problem for SMEs.

• All staff should answer the questions of these models.

• The models should include the fields needed to be ready before starting E-Learning.

The author worked in the European project ReadiSME [21] where the evaluation of E-Learning readiness was researched and a list of questions for the evaluation of E-Learning readiness supporting knowledge improvement was developed.A reference catalogue taking into consideration the categories Organization/Management, Technology/Services, Staff/Human Resources (Figure 3) was developed and used within ReadiSME and in other projects.

After the collection of data by using this catalogue, the results were evaluated by an E-Learning consultant of the company and completed/detailed in direct discussions with the staff and management of the company.

The next step was to determine knowledge needs and gaps and to develop corresponding approaches. Further steps are shown in Figure 4.

The design of the appropriate content for E-Learning-based training guided by the SME's knowledge requirements should be taken into consideration. It helps to improve products and services offered to clients, and knowledge concerning new markets, customers, and suppliers that needs to be transferred to the staff.

The design of blended learning material has a great importance and several authors have developed frameworks to guide this process.

Managers of SMEs need to be aware of the importance of mixing E-Learning with other forms of learning like mobile learning, webinars, access to on-demand learning resources, and social learning supported by social media for up-to-date skills and information [8].
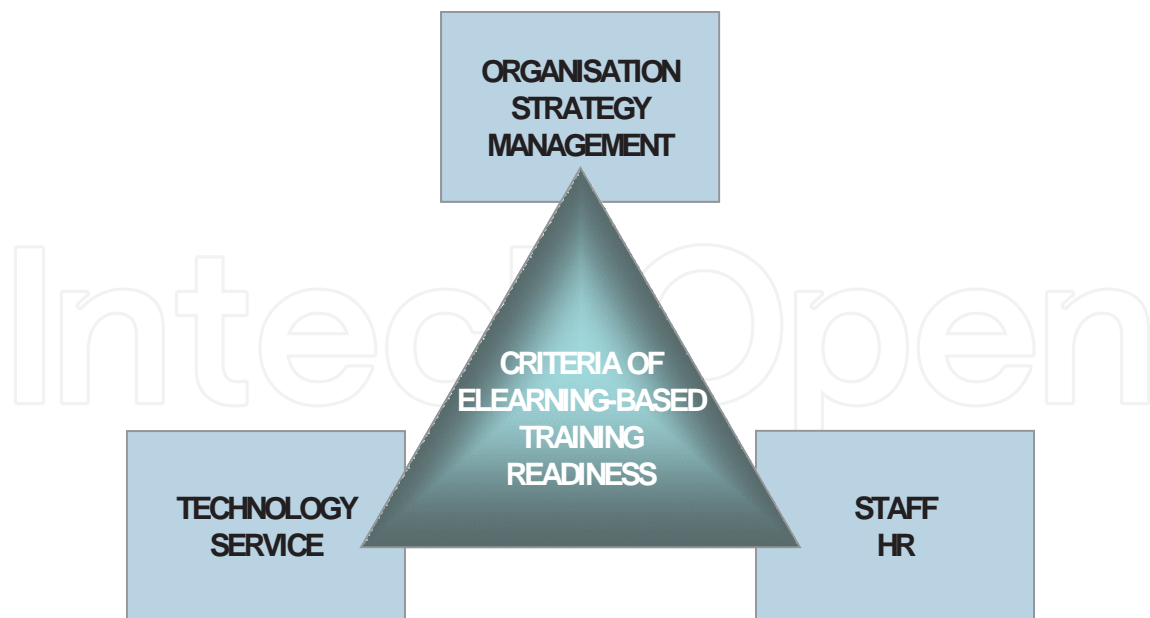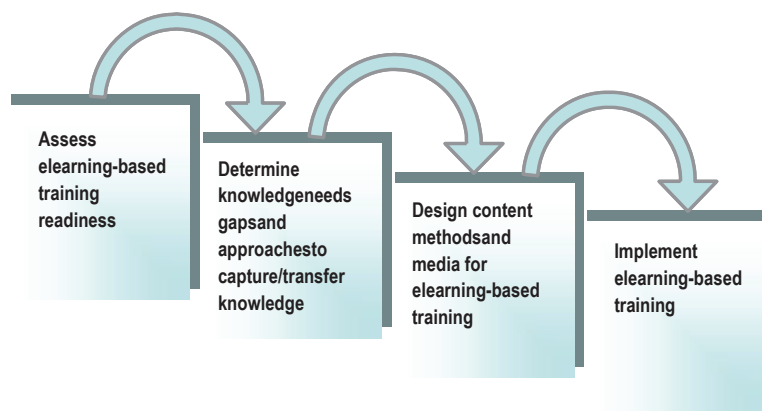
Figure 3. Categories [21]

Figure 4. Value chain [21]

4. Scenarios

Scenarios are particularly useful to explore a range of possible futures and driving forces what could lead to these futures. Scenario methodology has a major advantage over some methods – it can be participatory [22]. If used within learning in companies, it could engage learners and provide them with resources to improve their knowledge.

System thinking used in conjunction with scenario planning leads to plausible scenario story lines because the causal relationship between factors can be demonstrated. Scenarios are used by decision makers to explore ways to avoid risks and to improve opportunities. A common language and tools should be developed, so people from a variety of disciplines and backgrounds can work together effectively.

There are a number of different scenario planning tools available; they each provide a means of looking at reality [23] and encourage a company to look at the current situation, different events that can occur, how they can impact on the business, and how the business can plan effectively to take advantage or combat the negative effects of these events. They can be categorized depending on the direction the company wishes to take. In addition, it "simplifies the avalanche of data into a limited number of possible states" [22].This is particularly appropriate in today's knowledge environment where the amount of data is growing exponentially each day.

Chermak and Swanson [24] examined the use of scenario planning as a learning tool in which knowledge is developed. "Scenario planning is designed to support exploration of a constantly changing environment and uses multiple narrative stories about the past, present, and the future to stretch the thinking inside the organization." Thus, scenario planning involves gathering information about events that have occurred and will occur in the future and understand possibilities to address these. Thus, it involves generating knowledge and skills. Scenario planning is also heavily influenced by the social elements advocated by the organizational history and culture elements of Vygotsky's constructivist learning theory as "Scenario planning is also dependent upon the situation in which it is employed as a tool for learning and planning" [24].

Scenario planning combined with learning can help SMEs to identify the future state of their organization if they use new technologies like Cloud Computing technologies, accounting for all the limitations and issues that they need to consider [8].

Scenario-based E-Learning [25] can put the learners into real-life situations that allow them to gather skills or information that they will need for actual or future tasks. Information regarding the work context enables learners not only to easily manage it within their working tasks, but also to commit it to their long-term memory for future use. Some characteristics for scenario-based learning are [25]:

- Realistic, in order to fully engage learners providing students or employees with the required information.

- Learner-centric, drawing upon learners' core strengths and allowing them to use skill sets that they are developing, while at the same time improving upon their weak points.

- Involving learning strategies which use skills or knowledge that learners have already gathered and which can be applied to the current tasks.

- Due to their interactive character, the learners achieve real-world experience rather than theoretical information.

Scenario-based E-Learning:

- Improves the learners' engagement and understanding of core concepts.

- Motivates the learner.

- Allows the learner to directly see the E-Learning rewards.

- Challenges the learner without overwhelming their mental capacity.

Some important issues for Scenario-based techniques in E-Learning could be

- Design the E-Learning course with a thorough understanding of your learners' needs.

- Include as much interactivity as possible.

- Ensure that the context of the scenario is realistic and manageable.

Scenario-based E-Learning help trainers to create E-Learning/blended learning courses that are fully engaging for staff and provide them with the resources to solve current work tasks, to enhance their performance and their overall knowledge base for future work. These scenarios can enable them to use already established skills and draw upon real-life experience to achieve E-Learning experience in different environments.

5. Cloud Computing to Support Learning in SMEs

The NIST (National Institute of Standards and Technology) definition of Cloud Computing is as follows: "Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction" [26].

Useful characteristics of Cloud Computing [6] [26] for SMEs are:

- On-demand self-service. The user can benefit from capabilities such as server time and network storage, without requiring human interaction with each service provider.

- Broad network access. Capabilities are available over the network and accessed through standard mechanisms.

- Resource pooling. The resources are pooled to serve multiple users who generally have no control or knowledge over the exact location. Examples of resources include storage, processing, memory, network bandwidth, and virtual machines.

- Rapid elasticity. Capabilities can be rapidly and elastically provisioned.

- Measured Service. Resource usage can be monitored, controlled, and reported providing transparency for both the provider and user of the utilized service.

Figure 5 shows the most deployed models of Cloud Computing. They define the type of access to the cloud, i.e., how the cloud is located?

Cloud can have any of the four types of access: Public, Private, Hybrid, and Community.

Private Cloud:

- Is Cloud infrastructure operated solely for a single organization.

- Is managed internally or by a third-party and hosted internally or externally.
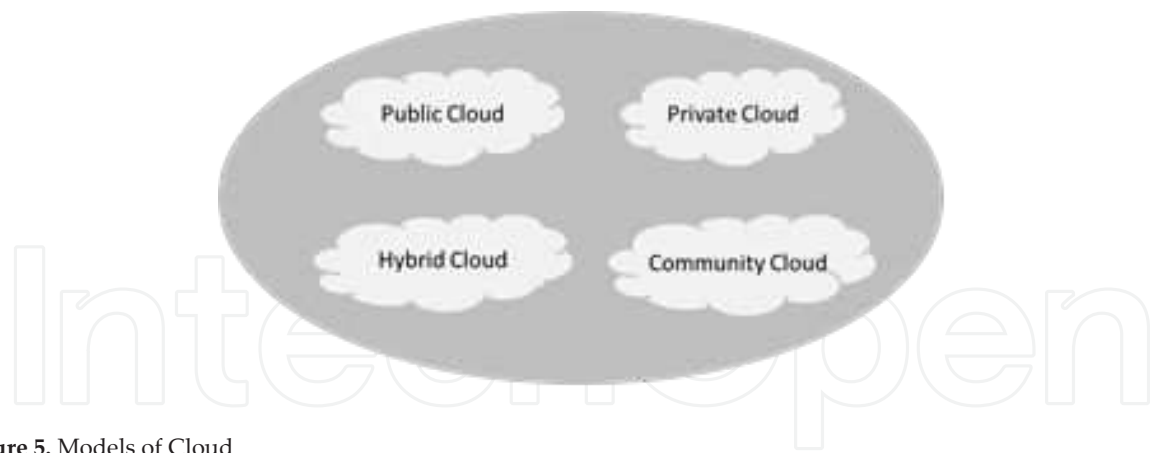
Figure 5. Models of Cloud

- Has attracted criticism because users "still have to buy, build, and manage them."

Public Cloud:

- It has services that are rendered over a network that is open for public use.

- It is technically little different from private cloud in architecture, but security considerations may be substantially different.

- It does not require users to manage the Cloud service.

- The hybrid Cloud is a composition of a public and private Cloud.

- Sensitive applications are handled in an internal private Cloud, while others are practiced in a public Cloud.

- A primary advantage is that an organization only pays for extra compute resources when they are needed.

A community Cloud is a multitenant infrastructure that is shared among several organizations from a specific group with common computing concerns. Service Models are the reference models on which the Cloud Computing is based. These can be categorized into three basic service models as listed below [26]:

- Cloud Software as a service (SaaS). Cloud Service Providers (CSP) applications running on a Cloud infrastructure are accessible from various client devices through a thin client interface such as a web browser.

- Cloud Platform as a service (PaaS). The user develops on the Cloud infrastructure or acquires applications created using programming languages and tools supported by the provider.

- Cloud Infrastructure as a service (IaaS). The CSP provide the user with storage, networks, and other fundamental computing resources where the consumer is able to deploy and run arbitrary software, which can include operating systems and applications.

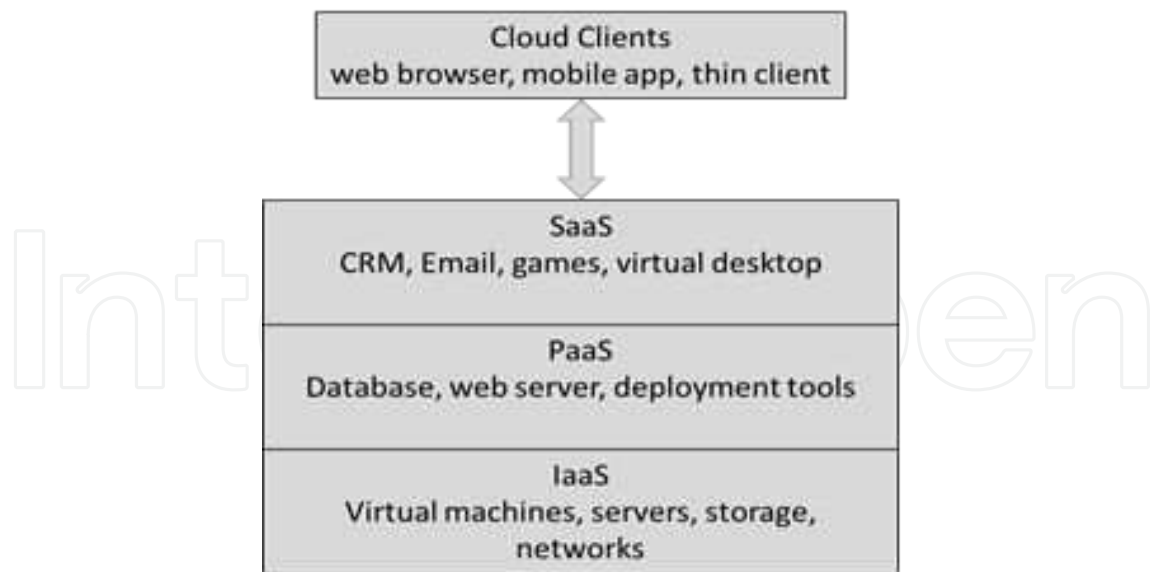Figure 6 shows the hierarchy of the three basic service models.

Figure 6. Service models

By using Cloud services SMEs can avail of opportunities that allow them to compete in an innovative ICT environment, and give a level playing field required to succeed in business [6].

In the discussion with German SMEs, the following advantages of Cloud Computing emerged:

• Up-to-date low-cost software solutions

• Unlimited data storage

• Access to data from anywhere and anytime means portability and flexibility; giving more time and effort to be placed on business strategies and solutions

• High levels of security protocol that ensures business and data protection

• Improved business performance

• Simplified data management

As with any technology, there are also a number of limitations or issues with Cloud Computing. One of the main issues is the reliability and security of data and the accessibility of this on a 24/7 basis, particularly when the Cloud service provider has an outage. Many companies will have problems about the lack of control over their ICT systems and the impact of a CSP on these [3].

These issues may inhibit an SME's decision to migrate to a Cloud Computing environment. In addition, there are other factors which may influence the decision:

• The lack of understanding of the infrastructure, cost, and appropriateness to the needs and scenarios of different companies from different business environments.

• The ICT skill levels of users, managers, and entrepreneurs.

• The readiness of SMEs to adopt Cloud Computing from a business perspective.

- Less time.

Some of these issues can be addressed by educating employees on the concept of Cloud Computing and developing business-based ICT skills in SMEs. This will allow them to make informed decisions about the appropriateness of Cloud Computing to their business strategy and what aspects can benefit them the most.

Besides advantages within business, Cloud Computing can be used for improving learning. Some aspects which could be improved by using Cloud Computing to implement E-Learning are scalability of E-Learning systems at the infrastructure level, development and assigning of resources only for determined tasks, need to configure and add new resources making the costs and resource management less expensive [27], [28].

Two main characteristics of Cloud Computing which could be an alternative to traditional ICT centres and could improve the E-Learning approaches in SMEs are the use of resources "on demand" and the transparent scalability so that the computational resources are assigned when they are necessary without the necessity of infrastructure understanding by the users.

Cloud Computing supports the efficient utilization of E-Learning resources following a dynamic rule of use. Costs related to computer infrastructure maintenance disappear.

Masud and Huang identified [29] some consequences and implications when the E-Learning services are deployed using Cloud Computing environments:

- Accessed via Web.

- Subscribers do not pay for installation, software maintenance, deployment, and server administration.

- Pay by subscription based on usage.

- Very high of security should be given by CSP because subscriber data are held on an SaaS server.

Ouf et al. [30] highlighted potential values of Cloud Computing, such as the following:

- When client computer crashes, there are almost no data lost because everything is stored in the Cloud.

- Students can work from different places, can find their files and edit them through the Cloud and browser-based applications accessed through various devices.

- Virtualization which makes possible the rapid replacement of a Cloud-located server.

- Centralized data storage.

- Easier monitoring of data access.

Figure 7 shows the architecture of a

Cloud Computing platform for E-Learning, which is usually common to most E-Learning approaches on the Cloud. Source [31]
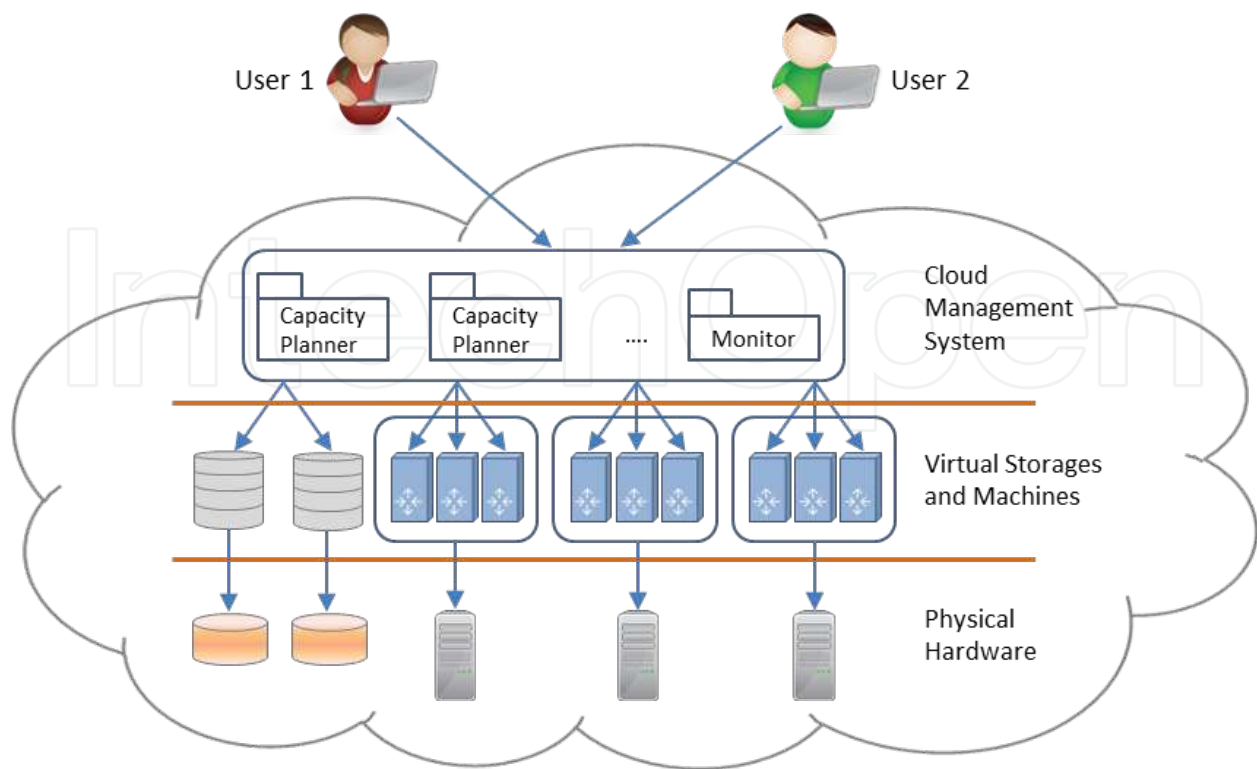
Figure 7. The architecture of a Cloud computer platform for E-Learning [31]

E-Learning could be used also to develop ICT skills in Cloud Computing for SMEs.

Few studies have been conducted into the emerging ICT skills required for Cloud Computing. Much research has focused on the technological aspects of Cloud Computing rather than the skills and preparation that companies require to allow them to avail of the strategic benefits this technology offers. Laugesen et al. [32] conducted an in-depth study of such skills with 72 companies, experts, public sector representatives, and representative institutions on e-skills requirements for Cloud Computing [32]. They found that the focus from primarily technical skills has moved to business skills, primarily those that are concerned with enabling and managing ICT as well as strategy development and managing change. Skills in the security of information were viewed as one of the most important. They also investigated the courses available to satisfy these skills needs and found that they were very technical, slow moving, and only covered partial elements. In addition, there were few courses that were "vendor neutral." Thus, it is important that contextualized business-related ICT skills are developed simultaneously with technology that informs companies of the range of technologies available out there and how they can assist with competitive advantage.

6. Examples

The European observatory project ARIEL [15] had partners from research institutes, universities, and E-Learning development firms of five European countries, and analysed fields of

application and factors leading to concepts about the future development of E-Learning in Europe through four alternative scenarios (Figure 8).

Within ARIEL, basic scenarios were developed with the help of a scenario matrix containing descriptors, which are important to answer ARIEL problems.

In Germany, the factors "vocational training system" and "business" are considered as the most important factors.

The results and scenarios developed in ARIEL have been used within the new EU-supported valorisation project SIMPEL, to provide sustainable models of E-Learning, in cooperation with SMEs and consultants, supporting the business of SMEs.
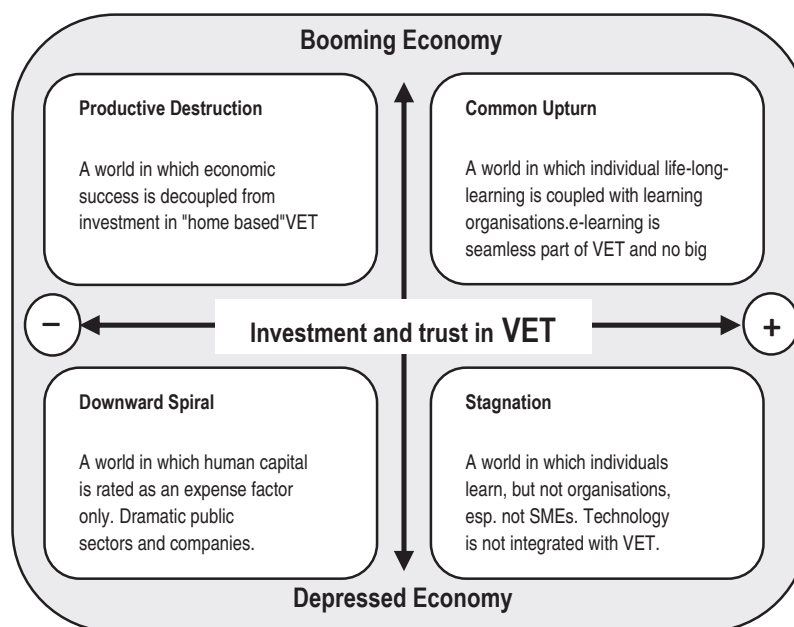
Figure 8. Ariel Scenarios [15]

Comparative analysis of the results of projects undertaken by the SIMPEL partners and results of national seminars within this project, show aspects that have to be considered when implementing E-Learning and using informal learning as a part of the strategy of the company in order to be competitive.

Partners from universities and SMEs in Germany, Ireland, Portugal, Romania, and Hungary worked within the EU Leonardo project Lifelong Learning – LLL Readiness in SMEs (Read-iSME – www.readisme.com [8]).

The project was based on the results of ARIEL and SIMPEL and was focused on methods to establish degrees of learning readiness based on E-Learning in SMEs and on impacting knowledge management. A step-by-step approach was used to implement learning concepts according to different levels of readiness, whilst simultaneously working toward higher levels of readiness [7], [15].

Within ReadiSME, 20 German SMEs have been interviewed and 2 case studies have been carried out in order to evaluate learning readiness of German SMEs and methods used taking into consideration categories like Organization, Technology, and Human Resources (Figure 3). Results of interviews not only from Germany but also from project partner countries are summarized below.

The majority of companies responded that E-Learning and blended learning are not sufficiently applied and they are still not up taking them as competitive tools. In previous studies done in projects like Ariel and SIMPEL, regarding barriers to training issues in SMEs, some similar issues, like in the ReadiSME, have been found.

A framework was developed within ReadiSME which uses the readiness results and suggests measures to improve learning readiness and steps to develop learning strategies. It uses a combination of the trans-theoretical model, which is a model for behaviour change and recommendations from the ARIEL and SIMPEL projects.

The framework developed within ReadiSME is based on a top-down and bottom-up approach taking into consideration both organizations and individuals. Last but not least, the frame proposed some steps which companies can use to implement sustainable learning strategies.

The European project Net Knowing 2.0 (www.netknowing.com/) aimed at improving E-Learning, knowledge management, and use of new technologies in SMEs.

Within Net Knowing 2.0, an E-Learning self-learning basic course was developed. It focused on benefits of informal learning for SMEs and how to learn using Web 2.0, social networks and net collaborating practices. A second course dealt with E-Learning focused on the implementation of Web 2.0-based informal learning, networking strategies, and mentoring in SMEs and other organizations.

Figure 9 presents a screenshot from the advanced course of the learning suite within Net Knowing 2.0. Within the project Net Knowing 2.0, scenarios have been used in companies providing a common vocabulary and an effective basis for communicating conditions and options.

The German SMEs affirm that scenarios can help them by:

• Identifying connections between old and new economies.

• Motivating stakeholders to make changes for transformation and to articulate the future of a city, region, etc.

• Initiating innovation for new products and services replacing traditional ones.

• Creating an organization's vision and purpose.

A scenario which was developed after the analysis of a German company situation and was used in the project for learning is the following:

A medium-sized retailer – active in Germany with about 20 locations – would like to position itself with a new strategy, because it was difficult to compete successfully in the highly

Figure 9. Advanced E-Learning course

competitive market. The new strategy for the next year should include a realistic assessment of the company goals. Using the technique of scenario, the thinking in options was encouraged and some future versions were discussed with the staff in a one-day workshop. The final decision is presented in the scenario below.

The conclusion was that the company has, on the one hand, a strong business unit with a diverse range of products. On the other hand, the company's focus cannot be identified. The company offers products in many areas, but it is not really excellent or clearly perceptible in any one of these areas. In future, new media should be used to advertise the products and increase the focus on the customers. More knowledge of competitors' products is necessary. The staff should participate in qualification courses and informal learning should be recognized as a learning method in the company. These changes have been discussed during another workshop by using scenario-based learning.

To present the scenarios at the workshop, the workshop leaders held presentations supported by animations and web-based material about possible strategies. So the company staff was

informed and motivated about the actual situation and future solutions. This method of Scenario-based learning can also take place internally in a company.

E-Learning scenarios could be built by using Microsoft PowerPoint or Articulate Presenter (www.articulate.com) for example. The Articulate Presenter is working with core features including branching, hyperlinking, slide masters and customizing player templates to create multiple learning paths.

In order to research the needs and problems of the German SMEs in adopting Cloud technology, some interviews were conducted by the authors with managers from SMEs. After the analysis of the interviews it became clear that Scenario-based E-Learning for the introduction of Cloud Computing in SMEs following the results of the interviews were necessary [33].

Another project, in which the authors use E-Learning scenarios, is SmartPA (www.smart-pa.eu). Within the project SmartPA, mentors will be trained for accountants and staff from public administrations and SMEs to use Cloud services [12].

The EU Erasmus+ project, supporting problem-based learning in SMEs through ICT-facilitated mentoring – Archimedes – will develop a framework for organizational problem-based learning and support the use of this form of learning, which should be widely adopted in SMEs, as well as informal/social learning. It will be realized through formal and informal mentoring processes. The project will use E-Learning content encouraging the use of Cloud Computing and ICT-based social networking [14].

7. Conclusions

To conclude from literature research and projects, it is evident that small and medium sized companies remain vital to the European economy but many of them fail in the first five years; so it is important to ensure the survival of these companies and encourage them to grow. In today's business world, SMEs are competing with a larger number of companies, many of these are multinationals; they have a greater number of staff and a wider pool of skills. So it is important for SMEs to acquire the relevant strategic skills as quickly as possible to remain ahead of the competition. To do this while trying to sustain an organization can be difficult as a lot of SME managers' time is spent on ensuring the company's survival. By allowing SMEs to leverage off external expertise through the use of E-Learning through the latest technologies such as Cloud Computing, new skills can be accessed in time.

New media can allow managers to access real-time information in a chunked manner as needed. Cloud Computing can allow them to access the material anytime, anywhere. But the advantages as well as risks of Cloud Computing to support business and learning in SMEs are not thoroughly explored.

The results of focus discussion groups with SME staff and education experts organized in the projects presented briefly in this paper, and workshops and work sessions organized at different conferences sustain our hypothesis that besides adequate education and training, by

using E-Learning, blended learning, and other forms, Scenario-based E-learning can motivate SME staff to learn and prepare for future work.

Acknowledgements

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