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Teaching Case

Managing the move to the cloud – analyzing the risks and opportunities of cloud-based accounting information systems

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Abstract

The accounting industry is being disrupted by the introduction of cloud-based accounting information systems (AIS) that allow for a more efficient allocation of work between the accountant and the client company. In cloud-based AIS, the accountant and the client company as well as third parties such as auditors can simultaneously work on the data in real time. This, in turn, enables a much more granular division of work between the parties. This teaching case considers Kluuvin Apteekki, a small pharmacy business whose owner faces critical management decisions on how to embrace this new opportunity to move to the cloud. Students are guided to evaluate the advantages and drawbacks of cloud computing in the specific context of accounting services. Also, the owner must make a set of critical decisions concerning which tasks to outsource. The accounting process comprises of several tasks and sub-tasks, adding to the complexity of the decision making problem. The main learning outcome of the case is related to the development of the skills and competencies needed in creating a strong business case for implementing IT-enabled business processes.
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Introduction

It is 6 pm on Saturday and Kluuvin Apteekki, a pharmacy in downtown Helsinki has closed an hour ago. Kluuvin Apteekki's sole owner and chief pharmacist Pia Moksi is sitting in her small office at the back of the pharmacy. Other employees have already left home and Pia has just finalized the closing routine; the weekend is finally here. Even though it has been a very long week, Pia is not in a hurry to leave. This is one of the rare moments when she has some time to reflect on what has been going on in the pharmacy during the week and think about the future. She noticed already a while ago that, in the last couple of years, moments like this have become a rare luxury.

Managing a pharmacy in the highly competitive environment of the Finnish capital was never an easy task. However, as business grew, the amount of administrative work related to the business, especially accounting tasks, became a significant burden. As she performed all the financial administration tasks herself in-house, the increased workload started to eat away at her valuable time, which should be spent on more important tasks in the management of the business.

In the past, Pia had encountered advertisements by different service providers, offering cloud-based accounting services. Recently, she attended the Pharmacy Days event where she heard more success stories on new ways of arranging financial administration from her colleagues in the industry. All that got Pia thinking, was it time also for her to give accounting services a try, and outsource the process. 'But how to do it?' A quick survey of her entrepreneur friends and a Google search for available service providers revealed a seemingly unlimited number of options, all with their pros and cons. 'How do cloud-based services work?', 'Which cloud system should I choose?', 'How should I reorganize pharmacy's accounting?', 'How do I choose a credible service provider?', 'What if it goes all wrong?'. There seemed to be more questions than answers, and very little time to think about them. All these questions in mind, Pia turns to you for guidance.

Setting the scene: Kluuvin apteekki and its accounting process

Kluuvin Apteekki is a privately owned pharmacy located in the heart of Helsinki city. The company employs 16 people, which includes seven full-time workers: two certified pharmacists (higher degree), three pharmacists, two technicians, as well as nine part-time employees: two pharmacists, a beautician, two technicians and four pharmacist trainees (see Figure 1). The turnover of the company last year was around €2.2 million.

Kluuvin Apteekki was established four years ago and has been growing ever since. In addition to the main pharmacy in the city centre, Kluuvin Apteekki recently opened another small pharmacy in the district of Merihaka (Figure 2), which employs one of the certified pharmacists and contributes €419 thousand to the turnover.

The pharmacy business in Helsinki is very competitive and at the same time, highly regulated by the state. Prescription drug sales and marketing are tightly controlled, and so are the other aspects of the business, such as the location of the pharmacies, their density in particular areas as well as the number of stores each company can own simultaneously. All this leaves limited space for creating competitive advantage. Thus, Kluuvin Apteekki always tried to stand out by offering exceptional customer service and by organizing clever sales campaigns for items not regulated by state (e.g. beauty and personal-care products). In addition, Pia has paid special attention to administrative efficiency to keep operation costs down.

Accounting process in Kluuvin Apteekki

The overall accounting process in Kluuvin Apteekki consists of five main groups of tasks: *sales, purchases, payments, reporting and payroll.* Each of these groups consist of three–six tasks that need to be completed, which add up to 22 accounting tasks in total. Table 1 provides a concise description of each group. The list of all tasks is presented in Table A1, Appendix.

Even though the tasks are essentially the same across different companies, there is no silver bullet for accounting related problems as the complexity of each task can vary greatly from company to company (see Figure 3 for an illustration of the generic accounting process in a Finnish SME). Each accounting task has its own specifics, and depending on the company context, it may require a different amount of information, workload, or expertise. For example, for a company with one or two permanent employees, the processing of the payroll can be a non-issue, as the process would be mostly the same every month. However, for a company employing tens or even hundreds of part-time workers with fluctuating work shifts and high employee turnover, the process can become very complex.

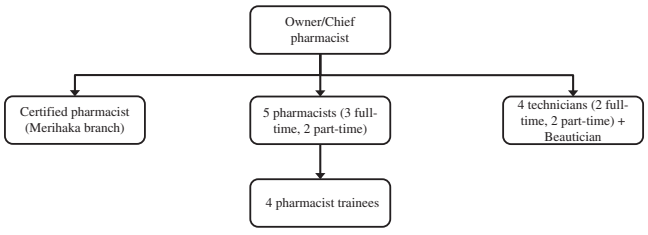

Figure 1 Organizational structure at Kluuvin Apteekki.

Pia Moksi is no stranger to the pharmacy administration with experience of nearly 20 years; first as a pharmacist and an administrator of a pharmacy in a small town in Eastern Finland for 15 years and then the last four years as the owner of Kluuvin Apteekki. She knows the ins and outs of the business. Therefore, at the start, she made a decision to do all of the accounting tasks herself in Kluuvin Apteekki. This made a lot of sense as Pia has a rich experience of dealing with pharmacy accounting under her belt as well as tens of hours spent on self-education, accounting courses, and seminars. Transferring all this expertise to an employee seemed like a huge task with an uncertain outcome.

Pia uses a number of information systems in order to deal with the tasks. In addition to the widely used Microsoft Excel, Pia has acquired software specialized for pharmacies in Finland to manage product, client and supplier registers, and to keep track of invoices. Even though Pia is familiar with electronic banking, the effort to digitize the invoicing process has not been successful. Last year, all of the 630 outgoing sales invoices were sent in paper by traditional mail, and out of the 840 received purchase invoices, 92% were received as paper, 5% were as email attachments and only 3% as structured e-invoices.[1] The reason is that Kluuvin Apteekki is a small player on the market, with very little influence on either suppliers or buyers to persuade them to switch to e-invoicing. Big suppliers usually enforce their mode of invoicing to smaller buyers, as well as their own information systems to process them. The pharmacy business is regulated and there are very few suppliers to deal with, thus Kluuvin Apteekki does not always have an alternative. On the positive side, the suppliers remain unchanged throughout the years, making the processing of their invoices relatively easy, once the invoicing method is adopted.

Payroll processing in Kluuvin Apteekki is quite complex as nine out of the 16 employees work part-time. On average, part-time employees work three six-hour shifts per week. However, this varies somewhat depending on the workload and availability of workers. Therefore, Pia has to record hours performed by workers every day. State legislation and collective agreements in the pharmacy industry also oblige employers to keep track of things like overtime work, public holidays, evening hours, and employee experience. These need to be factored in when paying salaries. Irregularities such as sick and maternity leaves add to the administrative burden, as they have to be processed accordingly. The payroll is also very sensitive to inaccuracies, as it deals directly with the employees' pay checks. Unpaid hours or missing overtime pay may cause tensions very quickly and, therefore, would require swift action to minimize the damage to employee morale.

On one hand, tasks related to reporting are less frequent than any other process in accounting. On the other hand, they are the most difficult and complex to process. Books need to be closed in the end of each financial period and everything has to be checked thoroughly. Errors in the reporting process might have far-reaching consequences and, therefore, Pia considers them to be associated with high risk. For example, calculations have to be done carefully in order to deduce the right amount of tax to be paid. Errors in annual reports may also lead to heavy fines from the tax authorities. Apart from the mathematical precision and attention to detail, reporting requires good knowledge of the tax regulations and a vision related to the financials of the company, as those allow the

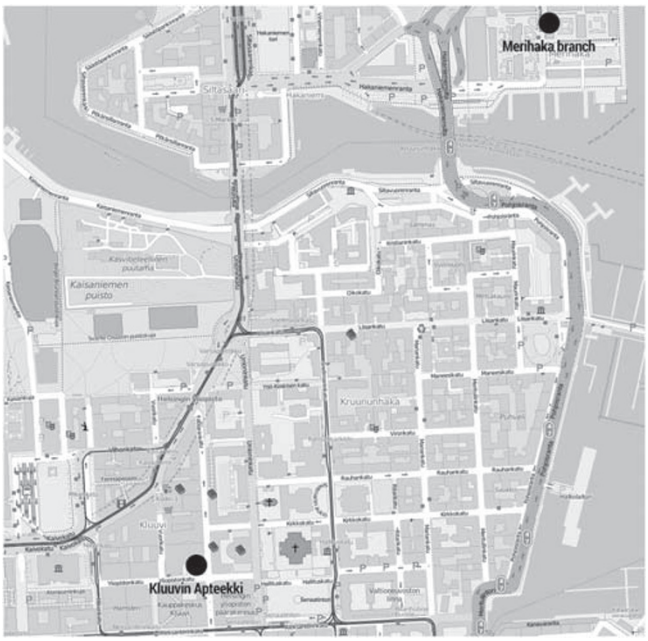

Figure 2 Kluuvin Apteekki locations in Helsinki. © OpenStreetMap contributors.
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company to efficiently invest its income to the development of the business and minimize the amount of the taxes paid. Moreover, tax regulations change from year to year and, therefore, Pia thinks that the person doing to the reporting process needs to be trained yearly to keep up to date on these changes in tax legislation.

Accounting services in Finland

The market of outsourcing financial administration is highly competitive in Finland. At the moment, more than 4000 independent accounting companies offer their services, and there are more than 150 information systems that help companies to accomplish the task. A few of those systems are cloud-based accounting information systems (AIS), a new breed of systems that offer the whole service and all functionalities over the Internet. Many cloud-based AIS also connect their system with third party digital services from banks and authorities, making it easy to conduct transactions and government reports electronically. The software providers usually operate through the accounting companies that sell the software forward to their customers bundled together with the accounting services (see Figure 4). For this reason, the software providers accentuate the features that allow for simultaneous work on the data by multiple parties (such as the accountant, the client company, and the auditor), paving the way for more efficient outsourcing arrangements. While such a set-up enables the client company to smoothly move from one accountant to another if needed (provided they work with the same cloud system), client companies become highly dependent on the of cloud service provider.

Cloud computing

For some time, Pia has been considering to reorganize her accounting process. While searching for information on alternatives, she came across the concept of cloud-based AIS, which, at the same time, intrigued and puzzled her. According to the local vendors of cloud-based AIS, their systems made accounting easier by greatly automating the process, integrating all the company data into one service, and allowing its users to receive the information in real time. What is more, these cloud-based accounting information systems also allowed their users to outsource accounting processes in a flexible manner. 'Because everything is on the Internet, it is all very flexible. You can freely choose the tasks you want to outsource and, at the same time, maintain control over the process, thanks to the real-time features provided by the system,' the representative of the accounting company tried to comfort Pia, noticing a skepticism in her look.

All this sounded very attractive, but Pia did not want to take anything at face value. So she decided to find out more. She read some research papers on cloud and they informed Pia that cloud computing refers to the information technology service model, where hardware and software services are delivered on-demand to customers across distributed IT resources and network in a self-service fashion, independent of the device and location (Motahari-Nezhad *et al.*, 2009; Marston *et al.*, 2011). Also, she learned that cloud has three service models. First, Software-as-a-Service (SaaS) model provides on-demand, ready-to-use software over the network to the user, familiar examples being consumer products such as Dropbox and Google Docs. Second, Platform-as-a-Service offers users a capability to deploy their own software or third party software compatible with the cloud provider's environment. Third, Infrastructure-as-a-Service provides only fundamental resources, such as computational power, networking and storage (Figure 5).

In addition to the service models, Pia discovered that cloud has different deployment models. A private cloud is a secure solution that assumes that the implementation of all layers of cloud (infrastructure, platform and software) stays within the company IT. While this solution offers high levels of control over the service, security, and privacy of the data, it is also expensive as the company takes all the responsibility of implementation and maintenance. A public cloud model, on the other hand, assumes that services are deployed and maintained by the cloud provider within its own infrastructure. This solution requires relatively little investment and offers full benefits of scalability, as the provider usually possesses powerful IT resources that are able to accommodate the fluctuating demand of customers. Caveats of a public cloud include issues with security and privacy, as customer data moves to the servers of the cloud provider. Users of a public cloud also become highly reliant on the provider. For example, if a public cloud-based service went offline, it could potentially paralyze the business of a customer, the latter being powerless to do anything about it. There is also the middle option of a hybrid cloud model, which combines parts of a private and a public cloud. The idea of a hybrid cloud is to provide control on crucial parts of the process, while allowing public cloud services to deal with routine and computing intensive tasks. However, a hybrid cloud model also has its own downsides, manifesting in the complexity of the service arrangements and contracting. It also requires a significant effort to set appropriate policies to avoid security breaches and leaks of data between the public and private part of the cloud service.

Table 1 Groups of accounting tasks at Kluuvin Apteekki

Group of tasks	*Description*
Sales	Sales represent a detailed itemization of sales made, presented in date sequence. It may also contain credits issued that reduce the amount of sales (e.g. for products returned by customers). The information in a sales ledger can be quite detailed, including such items as the sale date, invoice number, customer name, items sold, sale amounts, freight charged, sales taxes, value-added tax, and so on.
Purchases	The purchase ledger is a sub-ledger in which all purchases made by Kluuvin Apteekki are recorded. The purchase ledger shows which purchases have been paid for and which purchases remain outstanding. A typical transaction entered into the purchase ledger will record an account payable, followed at a later date by a payment transaction that eliminates the account payable.
Payments	Payments refer to all monetary transactions between Kluuvin Apteekki and third parties for the goods or services that are purchased by the company or additional fees and payments due.
Reporting	Accounting reports are referred to as periodic statements, which show the financial position of a firm at a given time or over a stated period, resulting from its business transactions and operations.
Payroll	Payroll refers to the amount paid to employees for services they provided during a certain period of time and is crucial to the companies as payroll and payroll taxes can significantly affect the net income of the company.

The main value of cloud computing for businesses derives from offering resources in an economical, scalable and flexible manner, which are affordable and attractive to IT customers and investors (Motahari-Nezhad *et al.*, 2009). It can be argued that the promising business benefits of the cloud resulted in high expectations.

Again, all this sounded interesting and promising if sometimes unclear and confusing. As a result of her research, she identified three systems that seemed to be worth considering (see Table 2). Pia evaluated three systems highlighting the important dimensions, such as user interface, integration capabilities, modularity, and price.

The great promises, presented by cloud vendors, were backed up with clever jargon, numbers, and overall excitement. However, as Pia is looking for *the* solution for her business, she cannot tolerate any uncertainty. ' "Good enough" is not good enough for me,' thought Pia. Therefore, she decided to go beyond abstract benefits and concentrate on the concrete features of cloud computing.

Cloud computing is associated with lower costs as the whole service runs on the computers of the service provider. Also, cloud-based systems are delivered as SaaS, which means that there are no costly investments into the software licenses, and the user can pay for everything based on usage. However, Pia has already invested in her software and any payment for the new system seemed like an additional cost. The 'pay per use' -model, offered by some systems, was also suspicious to her as she already had to deal with possible hidden costs from accountants, and this seemed like another possible source of such costs. 'You need to think the long term,' said the representative of the accounting company, 'The demand for accounting services for a small business like you varies greatly and, therefore, paying for it per use would end up in large savings in the long term compared to the fixed fee.' Still, to Pia it seemed like an additional problem of crafting and managing service-level agreements with both the accountant and the software provider, while constantly expecting unpleasant surprises.

The other advertised benefits of the cloud systems seemed to be centred on scalability, flexibility, and accessibility. Vendors of cloud-based software claimed that their systems could integrate all the company's processes in the same place and allow access 24/7 from any Internet connected device. Furthermore, because the data does not have to be stored and processed by the clients' computers, services can be rearranged in real time. This, in turn, adds to the flexibility of the process: Pia may decide, for example, to process more invoices herself without changing the agreements with the accountant. This meant that Pia could opt for minimal services at the beginning, but scale her usage as needed any time. All these benefits related to scalability and flexibility sounded very exciting. Pia thought that with the cloud-based systems it would be much easier to expand her business and open new pharmacies, as the software required for operations will be already accessible from day one. However, at the same time she had mixed feelings. Powerful data centres, application integration, virtual business environments … Is all this still suitable for a small company like hers? Does she really need all these capabilities, which – no doubt – come at a price? Are there some benefits to cloud systems that are less ambitious but would be extremely helpful for her particular business?

Accessibility was, on the other hand, more tangible and extremely interesting for Pia. 'Just imagine I could be on top of things from anywhere,' thought Pia. With the cloud system, she would be able to work together with her accountant from any location as long as she has an Internet connection. She could check the status of her company in real time, using the software at conferences or even at home in her cosy armchair instead of spending long winter evenings at a closed pharmacy, after all her employees had already left home. Currently, Pia's system does not allow for the real-time inclusion of accountants and auditors in the work processes. In the current set-up, the data is not accessible to multiple parties simultaneously, and, therefore, it would need to be manually sent between these parties each time changes are made in the system.

Accessibility also solved an important issue of control for Pia. Her main concern with the outsourcing of accounting was her inability to check what the third party accountant does. 'Now, with this new cloud system, I can actually outsource the accounting, but at the same time keep my hand on the pulse, by being able to check each and every transaction from my phone, or tablet at any given moment,' thought Pia. However, with this luxury, there came a number of problems. 'This means I have to share all my data with the software provider,