Implementing lean accounting principles to design and improve accounting processes – a case study from a Shared Service Centre

Ewelina Zarzycka *, Marcin Michalak **

Introduction

Developments changing the economic environment have contributed to the dynamic development and wide use of the Lean Management concept (LM) since the late 1980s. The LM concept is increasingly used not only in particular fields of activity (production, services, trade, administration, and even the public sector), but also in appropriate areas of the value chain, in primary as well as support activities. The Institute of Management Accountants (IMA, 2006) stresses that the LM concept is becoming a prerequisite for firms to survive in the global economy, where the main focus lies on creating customer value that allows for the creation of value for the company owner. In many cases the adoption of a lean management philosophy oriented towards added value maximization and waste elimination leads companies to internal outsourcing, establishing Shared Service Centres (SSC) or external outsourcing in the form of BPO (Business Process Outsourcing).

The principles underpinning the lean concept that Womack and Jones (1996) originally defined for primary processes in the value chain (lean manufacturing/production) were eventually extended to also support activities, for example accounting. In the literature and in practice, accounting which is transformed according to the lean concept is generally termed lean accounting, but for analytical purposes the term should be subdivided into two fields that, although distinct, are closely related to each other. These are:

1) accounting for lean (focused on the product of accounting), where the type, scope and usefulness of accounting information are adapted to account for the new information needs of managers at the different levels of a lean enterprise and for changes in its functioning (Kennedy et al., 2010);

2) lean for accounting (focused on the process of accounting), where the lean management tools are used to ensure that the accounting process is efficient and effective, and delivers the expected products.

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Unfortunately, prevailing accounting and management literature in the subject area does not give much space to a lean concept used as a means of improving the accounting processes. The lean literature mostly consists of reports and studies focused on the nature, objectives, methods and tools of the lean concept that apply to production processes or operations representing primary activities in Porter’s value chain (Kroll, 2004; Maskell, Baggaley, 2004). In contrast, lean accounting has attracted few studies so far. The first comprehensive reports and studies on this subject were published in the 1990s and at the beginning of the 21st century, mainly in the US, but they considered lean accounting mainly in from the point of view of the first of the above stipulated meanings (i.e. accounting for lean), rather than trying to develop ways of improving accounting processes (i.e. lean for accounting). At approximately the same time (the early 1990s) shared services entered the corporate lexicon as large decentralized companies looked to consolidate basic transactional processes such as payroll, purchasing and accounts payable, and to sell back those services at cost to the individual business.

The objective of this article is to discuss the use of lean management tools and methods such as value stream mapping and waste reduction as a means to redesign and improve accounting processes in the organisation. Moreover, the article is aimed at identifying the benefits that companies can have by using the lean concept in accounting processes. Therefore, the article aims to fill the research gap in this area, because in academic and professional literature the topic of improving accounting processes with lean management tools has not been covered widely. There is, however, quite rich literature on the consequences of the implementation of IT systems in accounting function and on the integration of accounting processes in the form of a shared-service centre (SSC), as a means of improving accounting processes.

The article is based on a case study investigation involving an SSC focused on providing accounting processes. The studied entity is owned by global concern X. The authors researched the practical aspects of the lean concept implemented in accounting function and identified tools used in this SSC in order to improve certain accounting subprocesses (invoice processing, month/year closing and reporting processes).

The article starts with a literature review on lean accounting. In the paper there is also a broad description of lean management/lean accounting concepts and selected lean management tools that can be used in the context of accounting function. Their understanding is critical as they constitute a framework for a continuous improvement process in the accounting field. This section is especially valuable for practitioners and academics, due to the fact that those issues are very rarely presented in the literature on lean accounting and SSCs. Finally, the empirical section shows practically how different tools and methods of lean accounting are implemented in the international firm in the SSC sector as well as the results of their implementation. The article

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1 Because of the privacy policy followed by the company studied its real name cannot be revealed.
concludes with a short discussion on the direction of further research in the field of lean accounting.

The type of a research method – a case study – used in this research does not allow the findings of the case study to be generalised across all industries, or within industries. However, the authors believe that the described case study and its findings explain the essence of lean accounting (i.e. lean for accounting), possible fields and ways its tools can be implemented, and how it can be inspiration for further research on lean accounting to investigate, e.g. cost-benefits analyses of lean tool implementations in accounting processes, the synergy effect between implementation of IT hardware/software, and lean management techniques in accounting function.

1. Literature review

As previously mentioned, academic and professional literature mostly consists of reports and studies focused on lean accounting mainly in terms of the information system and its products. Generally, the majority of researchers concentrate on the type and quality of accounting information relevant for a lean company. The first reports and studies on this subject were published in the 1990s and at the beginning of the 21st century, mainly by US researchers. The articles on lean accounting can be divided into four groups. The first category contains papers and books describing the general idea and concept of lean accounting. The second category focuses on specific tools and methods used in lean accounting, such as target costing, methods of performance measurements etc. The third group of recent papers presents the lessons learned from an actual lean accounting implementation. The last one contains papers presenting examples of the implementation of lean tools and methods for improvements in accounting processes. The most important studies on lean accounting are presented in the table below.

Table 1. Summary of lean accounting studies

<table>
<thead>
<tr>
<th>Research area</th>
<th>Author</th>
<th>Description of research problem</th>
</tr>
</thead>
</table>
Table 1. Summary of lean accounting studies (cont.)

<table>
<thead>
<tr>
<th>Research area</th>
<th>Author</th>
<th>Description of research problem</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hutzinger (2007)</td>
<td>Presentation of cost management techniques suitable for lean companies.</td>
</tr>
<tr>
<td></td>
<td>Maskell et al. (2012)</td>
<td>Concentration on transformation from a traditional accounting system to one that supports and enhances lean management; broad description of tools such as target costing, value stream performance measurement etc.</td>
</tr>
<tr>
<td>Implementation</td>
<td>Maynard (2008)</td>
<td>Presentation of observations from the implementation of lean accounting concepts in companies.</td>
</tr>
<tr>
<td></td>
<td>Kennedy et al. (2010);</td>
<td>On the example of 244 U.S. companies, testing a structural equation model that examines the role that value stream costing plays in the lean environment.</td>
</tr>
</tbody>
</table>

Source: developed by the authors.

The literature on SSCs is also very broad. The most often tackled subjects in the studies on SSCs are issues related to the methods of the organization of these entities and their management. Another research area identified in the SSC literature concerns human resources management, in particular, the appropriate selection of managers and employees in such an entity. Moreover, an important field covered by the literature on SSCs is an analysis of the benefits of such an organization. Only four studies has been devoted to aspects related to the challenges faced by accountants and management accountants in connection with work in SSCs, or cooperation with those organizations. The table below presents summary on SSC studies.

Table 2. Summary of SSC studies

<table>
<thead>
<tr>
<th>Research area</th>
<th>Author</th>
<th>Description of research problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisation and management of SSC/BPO</td>
<td>Frost (1997)</td>
<td>Identification of the key factors contributing to the successful implementation of the SSC.</td>
</tr>
<tr>
<td></td>
<td>Jarman (1998)</td>
<td>Analysis of SSCs in Europe, containing information on the characteristics of this type of organization.</td>
</tr>
<tr>
<td></td>
<td>King et al. (1998)</td>
<td>Identification of the tax and legal aspects related to the creation of an SSC.</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Research area</th>
<th>Author</th>
<th>Description of research problem</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Leach (2004)</td>
<td>Concentration on the influences of cultural and geographical factors on the value generated by a SSC.</td>
</tr>
<tr>
<td></td>
<td>Bangemann (2005)</td>
<td>A comprehensive study of the organization and management of an SSC.</td>
</tr>
<tr>
<td></td>
<td>Herbert &amp; Seal (2010),</td>
<td>Searching for the relationship between the formation of an SSC, the evolution of organizational forms of transnational corporations and the creation of a hybrid structure of an organization.</td>
</tr>
<tr>
<td></td>
<td>Wenderoth (2011)</td>
<td>Identification of the key success factors contributing to the efficient functioning of an SSC.</td>
</tr>
<tr>
<td></td>
<td>Deloitte (2011)</td>
<td>Study on a wide range of issues relating to the operation of those organizations, starting with overcoming cultural differences and finishing with tax issues.</td>
</tr>
<tr>
<td>HR management and motivation in SSC/BPO</td>
<td>Shah (1998)</td>
<td>Concentration on training methods, performance measurements and reward systems suitable for an SSC.</td>
</tr>
<tr>
<td></td>
<td>Mergy &amp; Records (2001)</td>
<td>Drawing attention to the need for greater involvement of top-level corporate managers in the process of managing an SSC.</td>
</tr>
<tr>
<td></td>
<td>Bergeron (2003)</td>
<td>Concentration on the issues related to the appropriate choice of managers and employees for an SSC.</td>
</tr>
<tr>
<td>Benefits from SSCs</td>
<td>Malcolm (1999)</td>
<td>Analysis of the costs and benefits that are associated with the creation of an SSC.</td>
</tr>
<tr>
<td></td>
<td>Cacciaguidi-Faxy et al. (2002)</td>
<td>Examination of the reasons to create an SSC and its benefits.</td>
</tr>
<tr>
<td></td>
<td>Davis (2005)</td>
<td>Analysis of the motives and benefits associated with the creation of a regional and global SSC.</td>
</tr>
<tr>
<td></td>
<td>Deloitte (2005)</td>
<td>Research on savings generated by an SSC.</td>
</tr>
<tr>
<td></td>
<td>KMPG (2010)</td>
<td>Research on the expectations and concerns related to the operation of SSCs located in Asia.</td>
</tr>
<tr>
<td>Changes in the profession of accountant / management accountant due to establishment of the SSC</td>
<td>Cacciaguidi-Faxy et al. (2002)</td>
<td>Analysis of the necessary skills and knowledge that an accountant should have in an SSC.</td>
</tr>
<tr>
<td></td>
<td>Minnaar &amp; Vosselman (2011)</td>
<td>Analysis of the impact of the creation of an SSC on management control.</td>
</tr>
<tr>
<td></td>
<td>Herbert &amp; Seal (2012)</td>
<td>Changes in the role and functions of the specialists of management accounting in an SSC.</td>
</tr>
<tr>
<td></td>
<td>Herbert &amp; Seal (2012a)</td>
<td>Study of the impact of an SSC on management accounting in an organization.</td>
</tr>
<tr>
<td>Post implementation stage of SSC development</td>
<td>Ziller et al. (2012)</td>
<td>Typology and analysis of SSC development stages.</td>
</tr>
</tbody>
</table>

Source: developed by the authors.

The review of academic and professional literature revealed that the topics of applying lean management principles (such as focusing on customer value and elimination of waste) to accounting processes as well as improving those processes with lean management tools have not been practically covered (an exception being Bragg, 2009). Even broad literature on SSC doesn’t describe the details of the operating processes in those organisations. This is due to a privacy policy followed by the com-
panies which don’t reveal the technical aspects. As a result, a brief presentation of lean management tools applied directly to accounting processes is crucial for understanding the changes presented in the case study.

2. The application of selected lean management tools to accounting

To be effective, the implementation of the lean concept in accounting must be based on the same lean management tools that have successfully been applied to production processes and operational management for a long time. The authors use the example of three such tools to indicate potential areas and ways of their implementation for managing accounting processes. They encompass: 5S – standardization of work, SMED, JiT and kanban taken together.

The 5S method used as a means of standardizing accounting processes makes them more effective and efficient. In the table below the authors stipulated each of the five S and indicated relative activities that can be conducted in each area in the accounting field:

Table 3. 5S in accounting function

<table>
<thead>
<tr>
<th>Individual ‘S’</th>
<th>Description of individual S and possible course of action to be made in accounting function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sort (work area)</td>
<td>Remove unnecessary items and documents, including folders and files, e-mails, etc.; archive documents that are perhaps needed, but for a different job or at a different time; remove unnecessary accounts that extend the time of seeking the account one needs, make errors more probable, and result in long report printouts; replace hard copies of documents with their electronic counterparts (e.g. scans) etc.</td>
</tr>
<tr>
<td>Straighten (work area)</td>
<td>Set up the workstation on the principles of ergonomics so tasks can be performed more efficiently; mark the places for storing particular types of items or documents; create special folders for documents and procedure blueprints; introduce a relevant document coding system; record the places where accounting documents have been sent, etc.; a very important role in straightening the workstation and particular areas of the accounting IT system is given to a visualisation system.</td>
</tr>
<tr>
<td>Sweep</td>
<td>The tidying up of the workstation, the IT system, the structure of the accounts; when a broadly defined workstation is kept tidy then errors, mistakes, documents that have not been recorded or accounted for, or incompletely processed documents, etc., are easier to see.</td>
</tr>
<tr>
<td>Standardise</td>
<td>This activity involves the consolidation of results achieved from the first three measures; the standardisation of accounting processes involves the development of instructions and job descriptions with attached explanations of their purpose (expected outcomes), the manner of working, and checklists.</td>
</tr>
<tr>
<td>Self-discipline/self-improvement</td>
<td>This S is to make sustainable the positive results of the four preceding S; it is linked to a system measuring performance in accounting (e.g. KPI) to enhance the motivation system and the culture of continuous improvement; the range of indicators used for evaluating and improving accounting processes includes:</td>
</tr>
</tbody>
</table>
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<table>
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<tr>
<th>Individual ‘S’</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>– the duration of an accounting cycle (e.g. the time between a document being received for processing and the completion of the operation);</td>
</tr>
<tr>
<td></td>
<td>– a ratio of invoices paid on time to all invoices in the period;</td>
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<tr>
<td></td>
<td>– the percentage of invoices withheld from payment at month end;</td>
</tr>
<tr>
<td></td>
<td>– the number of invoices returned to the supplier with stated reason in the month;</td>
</tr>
<tr>
<td></td>
<td>– aging: every amount older than 90 days explained at the end of the month;</td>
</tr>
<tr>
<td></td>
<td>– supplier codes created and modified in the month;</td>
</tr>
<tr>
<td></td>
<td>– variances in the intra-group trading accounts – their number and values;</td>
</tr>
<tr>
<td></td>
<td>– a ratio of invoices settled automatically with orders to all invoices in the period;</td>
</tr>
<tr>
<td></td>
<td>– the monthly number of manually processed payments;</td>
</tr>
<tr>
<td></td>
<td>– documents entered in the general ledger in the month.</td>
</tr>
</tbody>
</table>

Source: developed by the authors on the basis of research findings.

Another technique used in lean production is SMED (Single Minute Exchange of Die). It is oriented to the reduction of the retooling time. Its equivalent in an accounting function is month-end and year-end closing of the accounts. In many companies, these two tasks disrupt routine process accounting data recording and contribute to major backlogs. The overload of tasks at the end of the month or the year could be prevented by identifying end-of-month tasks that can be done earlier in the month, e.g. in periods when the accounting personnel is relatively less busy. A frequently adopted solution is to make preliminary reconciliations of balances on particular accounts before the month ends. This approach is comparable with transforming „internal retooling” performed at the time of closing the accounts into „external retooling” carried out before the month or the year ends. Other examples of solutions serving the purpose of shortening the account-closing time include the introduction of a general account closure schedule to provide those employees responsible with appropriate communication tools, or of automated account closing and consolidation processes.

One of the pillars of lean management is a Just-in-Time (JiT) system incorporating solutions such as kanban, the supermarket, and the FIFO formula. Accounting uses the solutions to ensure a steady flow of documents and operations, and to generate products that it is expected to deliver (information, settlements, and payments) exactly when they are needed. The purpose of JiT in accounting is to guarantee that all operations in this domain, such as the closing of accounts, tax settlements and payments, etc., are performed on time. The range of JiT tools includes automated reporting on the status of invoices and enquiries; automated release of payments when they become due (the date is a record in kanban), etc. Accounting documents entered into the IT system and waiting to be handled form a LIFO queue, the length of which determines the sequence of their allocation to workstations.
3. The application of lean management principles and tools to accounting processes and its results – a case study

3.1. The purpose, object and method of research

To fulfil the purpose of this article, its authors studied the practical aspects of the lean concept and its tools that the organization they selected for analysis implemented to improve certain accounting subprocesses and to increase customer value. The research set out to identify which lean management tools the organization had implemented and what benefits it obtained.

The object of the research was the case study of an international firm in the SSC sector that used lean accounting tools. The mission of the selected SSC is to become a provider of accountancy services designed to deliver the highest value to their users. The company hopes that the use of lean accounting tools will offer their customers more and more added value through efficient processing information characterising their businesses and environments.

As the main objective of this article is to identify the benefits arising from the application of lean concepts in accounting processes carried out in the form of an SSC, the authors studied quite a mature SSC (it has been operating for seven years) to isolate the benefits stemming from lean concepts from those that are the result of the consolidation of accounting processes in one site (SSC establishment).

Between April 2012 and February 2013, the authors conducted unstructured interviews with representatives of the selected firm who participated in a task force formed to improve the accounting processes. The task force consisted of 1 CEO of the SSC, 7 managers both from departments handling invoices and month-end/year-end reconciliations of the accounts, as well as from the controlling department. Each interview, lasting around 2 hours, was carried out according to a general scenario addressing the main areas of research. In addition to being allowed to interview the staff, the authors were also provided access to the working materials that the firm had used to analyse and design the value stream maps, and for the personnel guidelines. The interviews were delivered based on a survey form developed in advance, which contained the general topic addressed during the interview. The form was also used to collect and record the information provided during the interview. No recording equipment was used during the interviews as it had been requested by the respondents. In order to ensure the best quality of the studies performed (reliability and relevance) a triangulation of the methods and researchers was applied (Denzin, 2006).

Following the guidance by McKinnon (1988) to reduce the error-burden resulting from limitations and defects of the selected research method, each interview was conducted by two researchers; similarly, the reports from the interviews were prepared by two people and then compared, and any potential deviations were discussed and clarified with representatives of the respondent companies. The final report from the interview was authorised by the interviewed respondent. In order to enhance the reli-
ability and relevance of the study, the information gathered during the interview was compared and verified against the information obtained from the working materials and personal guidelines made available by the respondent company (contents analysis).

The research focused on three areas within the accounting system: the use of lean tools for invoice processing, month-end/year-end reconciliations of the accounts, and reporting. As the CEO of the firm said, „The entire process of lean implementation is focused on the search for customer value and waste elimination”.

3.2. Introductory step – focus on customer value and elimination of waste

The key principles of lean management require that all the company’s processes be set to create customer value. Thus, the only reason for accounting and all its processes to exist in the organization is their ability to generate customer value. This means that the introduction of a lean accounting system must begin with the development of a relevant definition of value for customer, and then the whole system must be remodelled in a way that allows customers’ expectations to be fulfilled at possibly low costs.

The SSC studied recognized that, apart from the main product of accounting – information that it delivers to their customers – the accounting processes having been conducted in the SSC also create other categories of value for its customers, such as timely, correct and cash-effective payment of the incoming and outgoing invoices (settlements), tax payments minimizing the outflow of cash (by reducing the effective rate of income tax, and making sure that all legitimately deductible amounts have really been deducted from the input VAT, etc.), prompt and complete processing of orders, wage calculations, and many others. This approach to value generated by accounting as a whole, or by its particular components, extends the group of customers whose expectations must be considered in designing and then performing accounting processes, as well as the range of values the processes are expected to generate. These users of other values generated by the accounting processes of the studied SSC were found:

- outside the company; e.g. customers expecting the timely settlement of payments, customers of the providers of accountancy services;
- inside the enterprise; e.g. employees handling payables who wait for orders to be entered into the system, the financial analysis staff waiting for data that the upstream process stage will upload to the accounting system, etc.

The definition of customer value was the prerequisite to prepare the present state map of the value stream in the accounting of the SSC. It provided also a basis for starting the work on removing waste (muda in Japanese) and for analysing all activities/processes in the stream to answer the following questions:
1) What is the purpose of the activity or process?
2) What value do we generate for its user?
The SSC, using the results of this analysis, managed to distinguish three types of operations:

- operations that do not create customer value, so they can and must be eliminated;
- operations that do not create customer value, but cannot be eliminated now, so their costs and execution times need to be reduced e.g. due to automation, IT hardware/software;
- operations that create customer value and therefore must be continuously improved (kaizen) to generate more value for customers.

Then the analysis done by the task force participating in the project helped them to identify 8 types of *muda* in their accounting processes (see table 4).

**Table 4. Areas for muda in accounting processes**

<table>
<thead>
<tr>
<th>Main types of waste according to the lean concept</th>
<th>Cases of waste in accounting processes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Muda:</strong> waiting</td>
<td>Waiting for documents to be entered into the system upstream, for signatures, decisions, decisions on applications, and for the system to carry out an operation (data processing).</td>
</tr>
<tr>
<td><strong>Muda:</strong> over-processing</td>
<td>Unnecessary or pedantic procedures. Data that are unnecessarily entered, stored and processed again. Duplicated actions and processes. An excessively complicated document distribution system. Printing and distributing of documents that are available online. Too many decision-making levels for a process. Actions that are performed, even though they are not needed to achieve the intended goals.</td>
</tr>
<tr>
<td><strong>Muda:</strong> unnecessary transport</td>
<td>Unnecessary circulation of documents between departments and institutions. People or teams working together but having to travel long distances (different floors, buildings, towns). Inefficient layout of workstations (communication problems). All movement of people, items or information that does not add value.</td>
</tr>
<tr>
<td><strong>Muda:</strong> unnecessary motion</td>
<td>Inefficient organization of jobs. Poor ergonomics. Poor layout of workstations, scanners, etc.</td>
</tr>
<tr>
<td><strong>Muda:</strong> overproduction</td>
<td>Too many copies of documents or the printing of unnecessary documents. Redundant documents are produced or distributed to people who do not need them. Procedures are created that nobody needs or uses. Too many copies of documents are generated and stored. Too many reports irrelevant to their users.</td>
</tr>
<tr>
<td><strong>Muda:</strong> inventories</td>
<td>Too many documents being processed concurrently at the same workstation. The storing of unnecessary documents.</td>
</tr>
<tr>
<td><strong>Muda:</strong> ineffective flows</td>
<td>The necessity to explain, correct, and seek additional information; an accounting system that needs employee support (low automation of processes).</td>
</tr>
</tbody>
</table>

Source: developed by the authors.
The data obtained from this analysis were used to make a future state map of the value stream in accounting function and to design solutions for transforming its present value stream in each of the three departments studied.

3.3. The lean concept in the context of invoice processing

According to the manager responsible for the invoice processing department, the internal customers in the organisation have been defined as the downstream users of products generated at earlier stages of the accounting value stream. The external customers were other units of the holding company that the studied firm served, as well as external stakeholders such as customers and suppliers.

On the basis of the above analysis, the firm established that the main factors that could increase the added value generated by invoice processing included: faster completion of the process, reduced volume of consumed resources, a shorter cash operating cycle (releasing payments only when due and payable, the timeliness of payments), more effective VAT burden (the utilization of all exemptions and deductions). Afterwards, the present value stream was mapped to visualize the whole process and analyse its components. As a result the following areas of waste were identified:

• a very large proportion of paper document processing, increasing the costs of materials and extending its execution time;
• partly as a consequence of the above – long document circulation times;
• unnecessary movement of documents;
• the excessive use of space (infrastructure resources) increasing capital employed and costs of property maintenance;
• long process completion times;
• difficult retrieval of documents.

The interviewed invoice processing manager said, „The source of all these types of waste was the extensive use of manual operations, because of the unavailability of proper IT support (automation). Moreover, the communication channels within the investigated area were inefficient and led to numerous process errors, so operations or document processing had to be repeated”.

Other examples of waste reported by the same manager during the interview were overdue cost invoices and revenue invoices. „They made suppliers and customers submit many enquiries about the reconciliation of payments/orders, extended the cash operating cycle and increased financial costs (interest); all this tarnished the firm’s reputation”.

The map of the existing value stream in invoice processing allowed the firm to introduce several improvements to make the process more effective and to eliminate sources of waste. The invoice processing manager revealed, „Our purpose in preparing the map of the target value stream was to create a global business model for all units in the holding company, so that the benefit multiplier could be increased along the organization’s value stream. We found that to offer customers the value they
expected, and to eliminate the identified areas of waste, a much higher automation of processes was required in the first place”. To enable it, the company selected subprocesses for restructuring that could make the whole process more efficient. Those subprocesses included the scanning and storing of documents, invoice coding, the coding of tax settlements, invoice payments, and the handling of customers’ and suppliers’ enquiries. To derive more value from tax settlements the firm’s management decided to dedicate to the process an additional resource of tax law expertise.

To increase the level of automation of invoice processing, an EDI system was introduced for handling in-house transactions and transactions with the key (strategic) business partners (suppliers). Once the system was in place, the previous movement of paper documents could be replaced with the distribution of electronic documents. The new system allowed a physical document and its electronic counterpart to be retrieved whenever needed. Moreover, EDI also ensured a continuous flow of products, which is another one of the principles of the lean concept which must be ensured.

The interviewed invoice processing manager highlighted that an important step in the change process was the implementation of ERP IT solutions that greatly improved invoice processing, by automating the processing of orders and the approval of invoices for payment, and by introducing the permitted price deviations. The IT tools also allowed reports on the invoice status and invoice-related enquiries to be generated, and even the automated distribution of e-mails to customers about their withheld invoices. The standardisation of the invoice handling process that came with the ERP system was definitely a great advancement. According to the invoice processing manager: „To offer more value to the external customers we set up a website for communicating with the contracting parties. This self-running platform provided its users with access to account balances, the status of payments, etc”.

It is important to note that each step in the improvement process in the studied firm was systematically controlled and evaluated, which contributed to its successful implementation.

All the presented changes and the new value stream in invoice handling produced a number of benefits. The number of documents that had to be reprocessed due to miscoding, wrong verification of invoices, and double or incorrect payments decreased by 70%, and the total time needed to process invoices was now cut by one-fourth. The firm managers found that following the changes 80% of invoices were consistent with orders, and that the number of invoices paid on time increased by 10%. The whole set of improvements increased overall productivity of labour by 35%; at the same time, the number of contracting partners’ enquiries and complaints about invoices decreased by 80%.

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2 EDI is IT hardware and software devices for circulating accounting documents that allows the documents to be handled either automatically on an on-going basis according to the FIFO formula.
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With better invoice handling processes, higher value could be generated for both the internal customer (the firm) and the external customers of the process. The examples of areas where value increased include:
- the optimisation of the cash operating cycle by releasing payments only when due, and shortening the time elapsing between a sale invoice being produced and then received by the customer;
- reduced outflow of cash (following the elimination of double payments, missed discounts, not refunded VAT amounts);
- significantly reduced risk of discontinued deliveries and production delays caused by the non-payment of suppliers’ invoices,

In the firm’s CEO opinion: „These changes enhanced our reputation in the eyes of our business partners, contributing to their higher satisfaction with the cooperation”.

To improve the situation, and then to retain and maximise the benefits, the firm adopted a KPI system (Key Performance Indicators) and linked it to its motivation system. The KPI system covered the monthly reporting on the numbers, values and types of overdue items, as well as the monthly calculation of other key indicators of performance, e.g. the number of documents processed per unit of time; the number of documents that had to be reprocessed; the number of invalid transactions; the number of incorrect payments; the number of withheld invoices.

3.4. Shorter account-closing times and more effective month-end/year-end closing

Another area that the studied firm decided to improve was month-end and year-end closing of accounts. The manager responsible for this process indicated that „the primary value the customer of this process expects is the availability of data and information from the event as soon as it occurs and particularly a possibly short time of reconciliation of the accounts at the end of the month or year”. Again, the waste was identified as soon as the present state of the value stream was mapped and analysed, allowing the nature of problems in this area to be understood. According to the process manager: „The main problem, we faced – typical for almost every accounting function – was the mounting workload at the period’s end that significantly complicated work processes and the effective use of resources”. The problem in the firm was compounded by the large proportion of manual operations that required the engagement of additional employees and increased the use of other resources. All these inefficiencies considerably increased the process costs. Because no standards were available and the input data formats significantly differed from the output data formats, the generated information was frequently incomplete or inappropriate, increasing the amount of work to be redone. An additional problem was inefficient communication between the process operators. Following the first decision that was made to boost the efficiency of the monthly/annual reconciliation of the accounts, a financial and business reporting process based on the ERP system and tools automating the account
closing and consolidation processes (see, for instance, BCS Compliancy Monitor, BCS vs. R/3 Recon tool) was introduced. As a result, most manual operations were automated (e.g. the journal, the reconciliation of the accounts) and some operations necessary to close the accounts were aggregated. Further, the input and output data formats were standardised (the journal, reconciliations, reports).

To deliver the value expected by the customers of the process, the continuity of flows had to be ensured, and the advantages of the SMED approach had to be exploited.

A major improvement in the change process consisted of the introduction of a schedule of the month-end/year end reconciliations of the firm’s accounts. This solution decreased the end-of-month workload, because some activities (e.g. pre-reconciliation) were moved to less busy periods. All operations related to month-end reconciliations of the accounts were put under the control of the newly developed reconciliation procedures, which additionally explained how irregular situations and the reconciliation of the corporate entries should be handled. In this way, the process operators received tools enabling effective communication and the reconciliation of the accounts at month end.

The benefits arising from all these improvements and the new value stream designed for month-end/year-end closing of the accounts were the following:

- the volume of reprocessed data decreased by 70%;
- the time needed to close the accounts and prepare reports was cut by 40%;
- total productivity of labour increased by 30%;
- the costs of financial reporting dropped by 25%.

In analysing the benefits one should not miss the fact that the shorter time needed to prepare financial reports translated into shorter time of their consolidation across the holding company, thus allowing its managers to make decisions faster. With the automation of transactions, the financial department staff could concentrate on processes generating more value added.

According to the CEO: „the new account reconciliation process turned out to be more reliable and timely, and offered higher quality information to customers, investors and other stakeholders”.

### 3.5. Lean reporting

The primary value of reporting that customers seek lies in the timeliness of information for the decisions making process. Given the subject of this article, its authors focused on the technical aspects of reporting in the analysed firm, i.e. the timeliness, report distribution, the formats and the visualisation of reports.

Having analysed its reporting processes with respect to value and waste, the reporting manager of the firm found that „the main problem lay in the fact that too many reports were produced and that a consistent system for their distribution across the international company did not exist”. Another finding was that most reports were prepared manually in the financial department, which kept its employees busy much
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of the time. The different formats of the input and output data made reporting an extremely time-consuming process, increased both the risk of errors and the wait time for a report.

After the map of the present value stream in reporting was analysed, the following improvements were proposed:

• the creation of a central-level database for generating reports, which would handle the needs of hundreds of external customers (the redefinition and standardization of reports);
• the establishment of a central communication office for supporting financial controllers based in business units in performing their routine analyses, as well as ad hoc tasks;
• the development of single Business Intelligence model serving as a global information-generating system.

The improvements decreased the mean wait time for a report by as much as 50%. The reporting productivity growth estimated at 74% considerably reduced the costs of reporting. An important effect was that the customers could be offered more added value now, because better-quality reports could be delivered in a shorter time. The changes facilitated the consolidation of reports in addition to ensuring their comparability.

Conclusion and discussion

The benefits that the lean concept brings to accounting can be divided into two categories:

• the information generated by the accounting system is adjusted to the needs of its users located inside and outside of the lean organization;
• the accounting processes are realized more effectively, ensuring higher quality and generating more added value for the customer at a lower cost.

In the described case study of an SSC organisation, lean solutions offer measurable improvements in the very area of accounting. According to what this research has found, better performance can be observed in areas such as the processing of invoices (settlements), the reconciliation of the accounts, as well as reporting. The major benefits that come with lean accounting include:

• lower process costs and cost per transaction;
• shorter and less labour-intensive processes;
• more efficient use of cash because payments are released only when dues and taxes are managed more effectively (VAT refunds);
• the elimination of process errors;
• shorter time needed to generate information (reports), etc.

It must be remembered, though, that while organizations clearly benefit from the lean concept, the benefits only come in the long term. For satisfying results to appear,
the way the whole organization is managed must change significantly, particularly its corporate culture. The challenge is even greater as over 80% of the workforce of an SSC employed in the accounting function are devoted to transaction processing, so they should be influenced by the changes analysed in this article (Bragg, 2009).

This article doesn’t present all relevant aspects of lean accounting implementation, such as the cost of examining all accounting procedures and documents in order to realize the project, and it does not compare those costs with the benefits gained due to the use of lean accounting tools. Moreover, the reaction of the workforce and managers of an SSC on the changing environment and new organization of processes is also extremely interesting and ought to be investigated. Thus, this introductory case study on the use of lean accounting tools in accounting processes ought to trigger further research on other issues concerning the lean accounting concept.

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Summary
Developments which changed the economic environment, and the measures firms adopted to deal with them, have contributed since the late 1980s to the dynamic development and wide use of the Lean Management concept (LM). The LM concept is increasingly used not only in particular fields of activity, but also in appropriate areas of the value chain (primary as well as support processes). A review of the litera-
ture and cases studies shows practical benefits that a company may derive from making its primary functions lean. Theoretical assumptions and the empirical data also indicate that in order to produce positive and sustainable effects, the lean concept must be used consistently and systematically over a long period across the company’s management system, rather than applied to the primary processes alone. The authors of this article decided to analyse how lean management tools and methods can be employed to redesign and improve accounting processes and to identify the benefits that customers and companies can have by using lean accounting processes. Therefore, the article indirectly aims to fill the research gap in this area. The article is based on a case study involving a shared-service centre (accounting services) run by an international concern, X.

**Keywords:** lean accounting, processes improvement, value stream.

**Streszczenie**

Zastosowanie koncepcji lean management w projektowaniu i doskonaleniu procesów rachunkowości – przypadek Centrum Usług Wspólnych

W wyniku zachodzących zmian w otoczeniu oraz dokonywanych przez przedsiębiorstwa działań dostosowawczych od końca lat 80. ubiegłego wieku obserwuje się dynamiczny rozwój oraz wzrost zakresu wykorzystania koncepcji szczupłego zarządzania (lean management – LM). Rozszerzenie zakresu stosowania tej koncepcji odnosi się zarówno do rodzajów działalności, jak i obszarów jej zastosowania w ramach łańcucha wartości (od procesów podstawowych do procesów wspomagających). Analiza literatury i opisów przypadków praktycznych wskazuje na istotne korzyści, jakie powoduje wdrożenie koncepcji lean w obszarze funkcji podstawowych w przedsiębiorstwie. Jednakże dane empiryczne wskazują, że pozytywne i długotrwałe efekty tej koncepcji ujawniają się dopiero w wyniku konsekwentnego i systematycznego jej stosowania w długim okresie, a także jej implementacji we wszystkich obszarach systemu zarządzania przedsiębiorstwem, nie tylko w procesach podstawowych. Celem tego artykułu jest analiza możliwości implementacji narzędzi i metod lean management w projektowaniu i doskonaleniu procesów rachunkowości oraz identyfikacja korzyści wynikających z zastosowania tej koncepcji w rachunkowości z perspektywy klienta i przedsiębiorstwa. Tym samym pośrednim celem tego artykułu jest przyczynienie się do zredukowania istniejącej luki badawczej w przedmiotowym obszarze. Autorzy artykułu jako metodę badawczą wykorzystali studium przypadku, przeprowadzone na przykładzie Centrum Usług Wspólnych (księgowych) należącego do międzynarodowego koncernu X.

**Słowa kluczowe:** szczupła rachunkowość, udoskonalanie procesów, strumień wartości.