

25 Years of Change in Management Control Systems and Business Education in Estonia

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Abstract: During the last 25 years, the Estonian economy has transitioned from a centrally planned economy to a market-oriented, globally open, highly competitive economy. Although during these years there has been fast growth and Estonians could tell a lot of success stories, research shows that management practices are still less advanced compared to those in enterprises from developed countries. Increased competition, openness and innovation increased the significance of more sophisticated management control systems (MCS). Researchers accentuate the role of managers and their education and training in using and developing more sophisticated MCS in companies. The objective of the current paper is to better understand how changes in the business environment, managerial training and education are connected to developments in MCS in Estonia. This article provides an overview of the statistics and studies completed in Estonia over the last 25 years. As this study shows, the last decade has brought a different level of internationalization and development in the business environment and business education. The problems associated with developments in MCS, using cloud technology, business education and managerial training are the same in Estonia as in developed countries. To develop the business and economic environment in the country, Estonian entrepreneurs need high-level data processing, analytical and financial education, and practical training courses.

Keywords: *changes, education, Estonia, management control systems, manager, training*

Introduction

The globalizing business environment, shortening business cycles, developing information technology and increasing competition have been especially intensive over the last 25 years. In Estonia, as a post-Soviet country, the business environment has been expanding notably in connection to its reorientation from a centrally planned to a market economy at the beginning of the 1990s. Significant economic growth at the beginning of the 2000s, accession to the European Union in 2004, adopting the euro in January 2011 and introducing e-Residency in 2014 are landmark changes in Estonia during the last 25 years. However, despite e-Residency, e-signatures, e-(annual) reporting and e-government (see e-Estonia.com, 2016), organizations have limited ability to use information and cloud technology (Käsk, 2016), create knowledge-based added value through international cooperation (Eljas-Taal *et al.*, 2011) and are still less advanced compared to companies in developed countries (Alas *et al.*, 2015).

Increased competition, openness and innovation require an increase in managerial attention, coordination and control to guarantee alignment between activities and performance goals (Gordon & Narayanan, 1984; Mia, 1993; Chong & Chong, 1997; Tillema, 2005; Lääts, 2011). More sophisticated management control systems (MCS) have even increased their significance for successful management in the current environment (e.g., Ittner & Larcker, 2003; Päril, 2006; Foss *et al.*, 2011; Afonina, 2015; Rajnoha & Lorincová, 2015; Mikkus & Žukovits, 2016; CGMA, 2016). Studies show that the training and experience of managers correlate positively with their use of more sophisticated measurement systems (Birnberg & Wilner, 1986; Mendoza & Bescos, 2001; Päril & Haldma, 2010).

In Estonia, apart from the changes in the business environment, substantial changes have occurred in business education and training over the last 25 years (Kolbre *et al.*, 2006; Vadi *et al.*, 2011; Alas *et al.*, 2015). Consequently, it is important to analyse changes in MCS and in management education and training during the last 25 years in Estonia.

In Estonia, small and medium-sized enterprises (SME) make a significant contribution to GDP. SMEs bring a broad range of benefits in terms of growth in national income. For example, in 2015 SMEs produced 80 per cent of total profit (see Table 1). They provide important opportunities for employment (78 per cent of employment in 2015), and furthermore, they are a key source of and

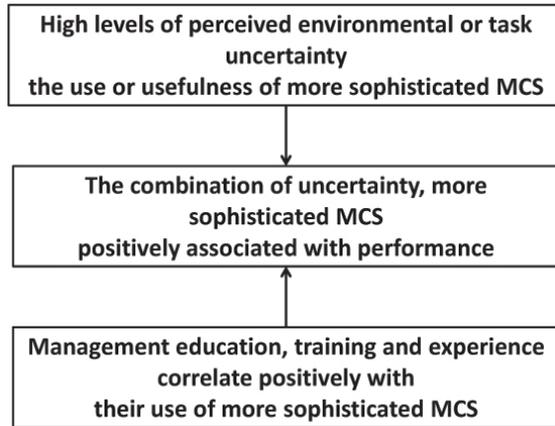


Figure 1. Links between the level of MCS, manager training and education and organizational performance

Source: Päril & Haldma, 2010.

outlet for entrepreneurial creativity and ideas. In a small country such as Estonia, SMEs constitute 99.8 per cent of the country's companies.

Table 1. Number of companies, number of employees, turnover and profit in euros for companies of different sizes

Company size	Number of employees		Turnover		Profit		Number of companies	
	Number	%	Thousand €	%	Thousand €	%	Number	%
Micro	123,058	29%	15,659,072	29%	1,461,013	44%	109,722	93.5%
Small	107,372	25%	13,514,019	25%	556,183	17%	6,281	5.4%
Medium	104,287	24%	12,632,169	24%	649,910	20%	1,200	1.0%
Large	91,424	21%	11,661,623	22%	649,227	20%	195	0.2%
Total	426,141	100%	53,466,883	100%	3,316,333	100%	117,398	100%

Source: Statistics Estonia, n.d.

Compared to large organizations, SMEs' survival depends more on their ability to adapt to the business environment (McAdam, 2000); in addition, the entrepreneurs' ability, background and experience affect their performance significantly. This makes a better understanding of the connection between management education and uses of MCS more important for a small, open and highly entrepreneurial post-Soviet country such as Estonia.

The objective of the current paper is to better understand how changes in the business environment, managerial training and education are connected to developments in MCS in Estonia over the last 25 years during the journey from a centrally planned to open market environment oriented toward intensive global competition. Although there are studies of financial accounting and reporting developments in Estonia during 1990–2005 (Haldma, 2004; 2006), there are no researches published in English in widely available sources that cover the last 25 years and explore the relationships between the use of MCS and the education of the managers using those systems.

The paper is divided into the following sections. The first section explains the changes and developments in MCS during the last 25 years, the second section provides an overview of changes in managerial education and training during the same period. Finally, some concluding thoughts are expressed and suggestions made for future research.

Changes in management control systems in 1990–2015

In countries in transition from a centrally planned to a market economy, the business environment has been expanding considerably over the past 25 years, which has led to a higher level of uncertainty, fiercer competition, and increased openness and innovation. In Estonia, more intensive competition and high levels of perceived environmental uncertainty demand the application and use of more sophisticated MCS in companies.

The investigations show the development of MCS in Estonian medium and large companies from the second half of the 1990s. As revealed by Haldma and Lääts (2002), the majority of Estonian medium and large companies improved their MCS in the period 1996–1999, during the reorientation to a market economy and after substantial changes to financial accounting regulations were introduced since 1995.

Hammer and Karilaid (2002) studied the use of financial and non-financial indicators in Estonian companies. They found that in addition to financial indicators (profit and its growth, turnover and its growth, cash flow), managers relied on some nonfinancial measures (market share, customer satisfaction) in their decisions. Although there were essential changes in MCS during the last half of the 1990s, based on longitudinal research, Lääts

(2011, p. 175) concludes that in the period 1994–2001 MCS in Estonia was still in its infancy.

Research conducted by Hammer and Karilaid (2002) in Estonia shows that at the beginning of the 2000s there was a willingness to use more sophisticated and integrated MCS compared to the financial and retrospective systems that managers used in that period. For the future, managers were planning to use more nonfinancial indicators and focus more on measuring customer and employee satisfaction. Estonian managers believed that profit and its growth, turnover and its growth, and liquidity ratios were among the measures they would be using less in the future (Hammer & Karilaid, 2002).

Based on research (Lääts *et al.*, 2011; Lääts, 2011; Lääts & Haldma, 2012), we can argue that the wider conceptual management accounting changes in Estonian medium and large companies took place in the period 2000–2007. The studies by Lääts once again certify that during these years, companies with higher levels of perceived market dynamics had applied more sophisticated MCS. For example, these companies reflected a greater use of flexible budgeting and rolling forecasting, as well as a balanced scorecard approach and market share as a performance indicator. Lääts *et al.*, (2011) and Lääts (2011) revealed that for 2004–2007 the changes in MCS were associated with the increased use of mid-term business planning, strategic planning and performance-based incentive systems.

The survey conducted by Päril in autumn 2002 (Päril, 2006) involved managers of Estonian small and medium-sized companies and shows that managers consider it extremely important to monitor financial accounting indicators like revenue, net profit and accounts receivable. At the same time, the managers of more successful companies value more highly observations of more sophisticated information including external information like their customers' cost- and profitability-related data, as well as non-financial, quality-related indicators directed away from the company. The research shows that the important needs for information, notably regarding the degree of customer satisfaction and the characteristics of competitors, are not satisfactory for managers (Päril, 2006).

In the years 2007–2009, during the economic recession, most companies were fighting to survive and tried to improve their business models as well as their MCS (Vadi *et al.*, 2011); however, the survey of Estonian management practices in 2010 (Vadi *et al.*, 2011) shows that the planning horizon in most companies was still short and most companies did not use a more sophisticated and integrated

MCS at the end of the first decade of the new millennium. Different tools (e.g., budgets and reports) were not usually integrated and the balanced scorecard-type framework was not popular in Estonian companies. Most companies with Estonian owners relied on formal financial indicators adding some sales indicators, though not in an integrated way.

One reason for the slow development of integrated and more sophisticated MCS could be the lack of knowledge about contemporary management control tools. As revealed in research conducted by Talvet (2013), about 60 per cent of small company managers participating in the study did not know about the balanced scorecard framework. This meant they did not have a tool for selecting relevant information and using it in an integrated way for everyday management processes.

Unfortunately, the recent study by Alas and others (2015) showed similar findings. This study showed that the planning horizon in 2015 is still short in companies belonging to Estonian owners. The most widespread management practice used is a one-year rolling budget that is renewed monthly or quarterly. However, research mentions that determining the long-term vision of the company is gaining importance at a slow pace, vision and values are also being formulated in a more mature way and the long-term goal and principles of performance are being considered more carefully.

The situation in 2010 in companies with foreign owners was quite different (Vadi *et al.*, 2011). These companies used more integrated, balanced scorecard-type MCS. In addition to financial indicators, these companies used more non-financial and personnel oriented indicators. One reason for these findings could be the size of the companies. The most common internal factor that has been examined in relation to MCS is organizational size. The results of these studies confirm that company size and more sophisticated MCS are positively correlated. Companies owned by foreign capital are usually larger than those owned by locals.

Based on the study of SMEs (Päril, 2006) and medium and large companies (Lääts, 2011), it was pointed out that, in the future, MCS in Estonian companies should include more sophisticated, both financial and non-financial, accounting data. The studies also emphasize that MCS will become more detailed and more indicators will reflect business environment information. These changes could increase the need for managers to analyse at a higher level of abstraction. As a result of information system integration, a growing amount of relevant data

can be included into an MCS, which means more well-trained and experienced accounting staff and more up-to-date information technology will be needed.

However, a more recent study (Mikkus & Žukovits, 2016) shows that only 41 per cent of Estonian companies use more sophisticated MCS. They say that small companies use less sophisticated MCS based mainly on financial indicators such as cost-benefit, costing, comparisons of budgets and plans, and customer profitability. They argue that about 13–14 different indicators and control tools can offer an integrated view of the company's processes and resources. Small Estonian companies usually use only 4–8 indicators, which provide a very narrow overview of the processes and resources.

However, their study shows that medium and large companies in Estonia use more sophisticated MCS. Large companies use, on average, 17–19 indicators and tools to obtain an integrated holistic overview of processes and resources. They also found a strong positive correlation between the level of MCS and performance.

Advances in information technology is a key force in developing more sophisticated and integrated MCS. Nowadays, it is already possible to use cloud-computing services almost anytime, anywhere and at a relatively low cost. Cloud computing is internet-based computing that provides shared processing resources and data to computers and other devices on demand. We can say that cloud computing is a utility like water or electricity. Using cloud technology, it is possible to access files and software from any device at any time. The key benefits in addition to elasticity, flexibility and accessibility are increased security as well as costs savings. This last factor is extremely important to SMEs, because they are not able to incur the costs of hosting and maintaining their own information systems and are more likely to be interested in adopting cloud technology to access the cost and efficiency benefits in the short term (Strauss *et al.*, 2014, p. 3). We can conclude that for the Estonian economy, as a small open economy in an entrepreneurial environment, adopting cloud technology is vital.

Although the benefits associated with cloud computing sound enormous, most Estonian companies are unsure of how to proceed with the migration into the cloud (Käsk, 2016). In addition, many enterprises in Estonia as well as in Germany have resisted cloud computing due to a lack of knowledge, security concerns and privacy issues (Käsk, 2016; Strauss *et al.*, 2014). As they concluded, managers see security problems and privacy issues because they do not have enough information or an understanding of the new technology. For Estonia,

this means that to be able to compete globally, more training and education in information technology and especially cloud computing is urgently needed. The key to developing more sophisticated MCS, especially for SMEs, is cloud technology and its access to business intelligence and ERP type software at a reasonable cost and high security level.

The Chartered Global Management Accountant (CGMA, 2016) has pointed out the importance of an integrated approach to using MCS, which includes active collaboration between leaders and employees. As emphasized by Strauss *et al.* (2014, p. 1): “By cloud technology any manager with a laptop or smart device can access business information systems, and this may contribute to faster and more collaborative decision making”. Surprisingly, the recent survey of Estonian management practices by Alas and others (2015) shows that engagement has even decreased in the management of Estonian companies during the last five years. The survey shows that the role of specialists, middle and junior managers has decreased remarkably in strategic planning. This lack of increased cooperation and collaborative decision making is not only occurring in Estonian companies, but as a German study shows (Strauss *et al.*, 2014, p. 6), the use of cloud technology has not dramatically changed the level of cooperative involvement in decision making. Of the respondents, 77 per cent answered that cloud technology had not changed the level of collaboration in decision making (Strauss *et al.*, 2014, p. 6).

To conclude the topic of changes in MCS during the last 25 years in Estonia, it is possible to distinguish different periods and patterns. Although the lines between the different periods are not very clear and strict, it is possible to identify the following five periods for the extension and development of MCS:

- 1990–1995: departure from planned economy, the period of turmoil;
- 1996–1999: rapid reorientation, the period of “infancy”;
- 2000–2006: the greatest changes, reaching “puberty”;
- 2007–2009: surviving the recession, desperate attempts to innovate MCS;
- 2010–2015: reaching the “comfort zone”, “adulthood” and stabilization.

The developments in MCS bring managers to more sophisticated and integrated information systems, which may contain a large variety of indicators (CIMA, 2009; CGMA, 2016). Looking at the research, the main organizational factors that facilitate developments in MCS in Estonian companies are support for the top management and the availability of competent financial staff (Lääts, 2011,

p. 175), (lack of) knowledge, security concerns and the privacy issues of cloud computing (Käsk, 2016). The key to developing and using more sophisticated and integrated MCS is training and educating managers. It is important to analyse developments and changes in business education and training over the last 25 years in Estonia.

Changes in management education and training in 1990–2015

In her research, Silvola (2005) concluded that the education of the manager (CEO) is an important factor in driving the adaptation of more sophisticated management control systems in the company. One reason given by Mendoza and Bescos (2001) is that, based on their research, better trained and financially experienced managers have a better grasp of modern accounting methods; therefore, they have better access to information and are more content with the management control information in their possession. Already thirty years ago, Birnberg and Wilner (1986) reached a similar conclusion. They claimed that managers with a financial background are better equipped to notice and understand changes in accounting data. Furthermore, experience allows them to develop more sophisticated financial models that allow them to confront information overflow by identifying priorities and understanding their problems more quickly. Several studies (Einhorn, 1974; Libby & Frederick, 1990; Lord & Maher, 1990) have come to the conclusion that inexperienced managers have difficulties in recognizing pertinent causal relationships in a given situation. Their mental models are not as precise, and they are less able to act on the primary causes. Therefore, developing and using more sophisticated MCS depends on education and training of the managers.

Comparing the educational level of Estonian managers with the general international level, it has been said that the former has been rather high. A survey conducted in Estonia in 2006 (Kolbre *et al.*, 2006) revealed that slightly more than 50 per cent of the managers had a higher education, whereas 57 per cent of entrepreneurs in highly developed countries had an education level above secondary education (Minitti, 2005). The survey, however, shows that the managers of Estonian enterprises lack economic, managerial and marketing knowledge. Among the managers of small enterprises, merely 14 per cent had a special business or managerial education (Kolbre *et al.*, 2006).

It can be assumed that contemporary training in business administration was started in Estonia at the beginning of the 1990s, when the shift from a centrally planned economy towards a market economy began. However, it is important to mention that there were opportunities in Estonia to cooperate and work with Western and US universities already since the 1960s. Estonia was referred to as “the West” in the Soviet Union. According to Janno Reiljan (2015), Dean of the School of Economics and Business Administration at Tartu University in 1993–1996, there were opportunities already in the 1960s but increasingly since the 1980s to work as visiting scholars in Western and US universities. For example, Professor Raoul Üksvärav (1928–2016) worked as a visiting researcher in the US through 1963–1964 and in Finland in 1984. Üksvärav is the author of management textbooks first published in the early 1970s. Professor Madis Habakuk (1938–2016) studied and worked at US universities and at international organizations from the 1970s. Habakuk established the first private business school in Estonia in 1988, now known as Estonian Business School. Of course, at the beginning of the 1990s, “the doors opened” and more scholars had opportunities to study and work abroad. For example, in summer 1993, 35 Estonian academics attended seven-week training courses at Bentley University in the US.

In transition countries a bias still exists that a business education from the Soviet era under the centrally planned economy is not as valuable as a business education that started in the second half of the 1990s. In 2005, the research conducted by Päril and Haldma (2010) surprisingly does not support the hypothesis of the better quality of the “new” education; that is, the use of more sophisticated MCS and measurement models by managers of SMEs who graduated in 1995–2005, compared to managers who graduated during the Soviet period and the very early 1990s. One reason could be that the difference is not as relevant as assumed or that the business or/and financial experience is more important than formal education. Managers who graduated before 1995 had had at least ten years of business or financial experience by the time the research was carried out in 2005. There is a large field for future research.

However, at the beginning of the 1990s, the business administration curriculum was officially replaced by a market-economy oriented curriculum in Estonian state universities. Simultaneously, several private universities aimed at delivering business and management curricula. As a result of these changes, the number of students of business administration rose dramatically through 1993–1999. The increase in the number of students continued steadily for the next ten years until 2009 (Fig. 2).

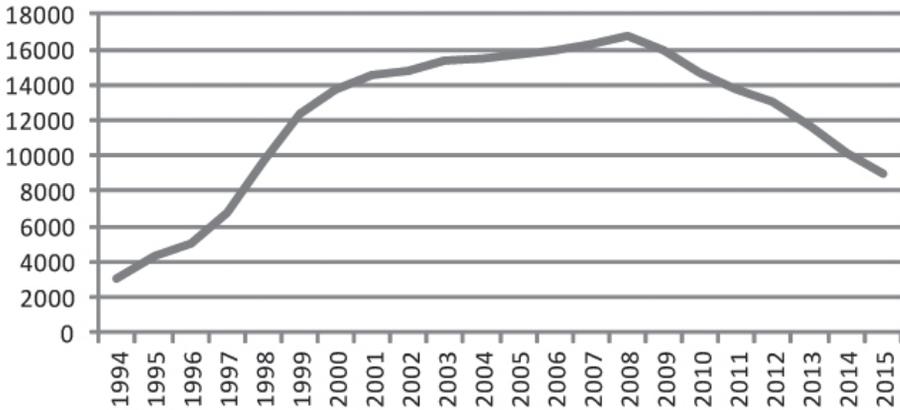


Figure 2. The number of students of business administration in Estonia, 1994–2015

Source: *Statistics Estonia, n.d.*

As a consequence, in Estonia, with a population of 1.3 million, the number of business and economics students in 1993 was 3,800 (Kolbre *et al.*, 2006); by 1999 it had grown to 12,400 (*Statistics Estonia, n.d.*), increasing during these years by about 30–40 per cent per year. In the following years, 2000–2008, the number of business administration students increased slightly but otherwise stabilized, and was approximately 16,800 by 2008 (*Statistics Estonia, n.d.*). Since 2009, the number of students started to decrease and dropped to 9,000 students by 2015.

In 2015–2016, the Estonian Qualifications Authority carried out a survey on the requirements of labour and skills in accounting. Based on this survey, approximately 50 per cent of business administration students studied subjects connected to accounting and finance (OSKA, 2016); that is, the subject connected to developing and using MCS in business.

If we look only at aggregated information on the number of business students, it is easy to reach the wrong conclusion, as interest in education in business administration has decreased since 2009. If we look at Figure 3, we can see that the number of students at the postgraduate level has increased steadily in the last 25 years; only in the last three years has there been a slight decrease, approximately 5 per cent per year compared to the previous year. This means that interest in a higher-level business education has increased continually for the last 25 years.

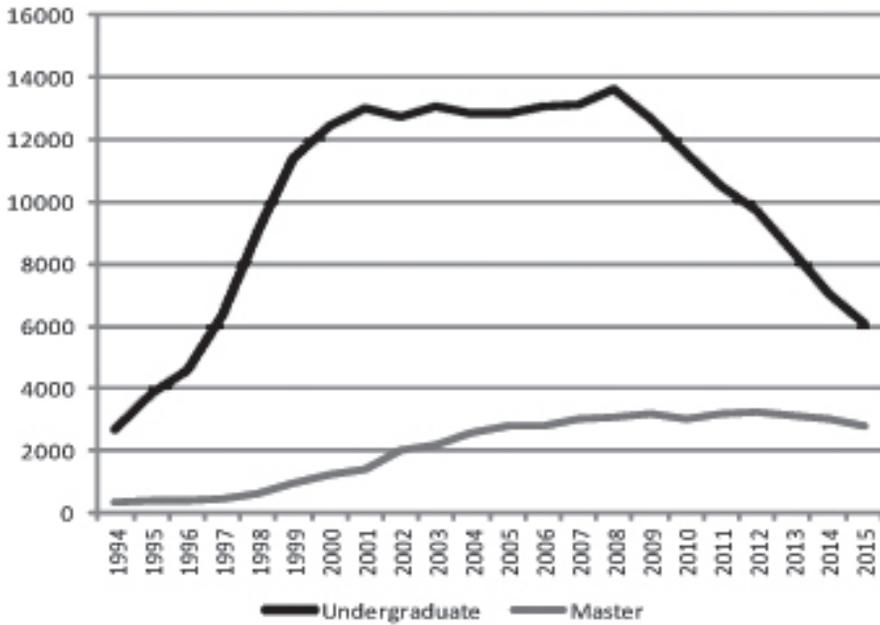


Figure 3. The number of undergraduate and master’s degree students, 1994–2015
 Source: *Statistics Estonia, n.d.*

The fall in the number of undergraduate students is explained by the huge demographic changes during the period 1988–1998. As we can see from Figure 4, there has been a fall in the number of births from 25,000 in 1988 to 13,500 in 1995 (the minimum was in 1998 with 12,200 births). We can see the same fall in the number of undergraduate students 20 years later. This means that there is no decrease in interest in business and economic education—just a fall in the overall number of undergraduate students. The explanation of the slight decrease in the number of master’s degree students during the last years could be the same. The smaller generation has just reached the age of the average master’s level student.

To conclude, the number of undergraduate students stabilized compared to the population, and the number of master’s degree students is even slightly increasing. This could mean that experienced adult people nowadays value formal postgraduate business education at Estonian universities and the life-long study concept is (hopefully) introduced slowly in Estonia.

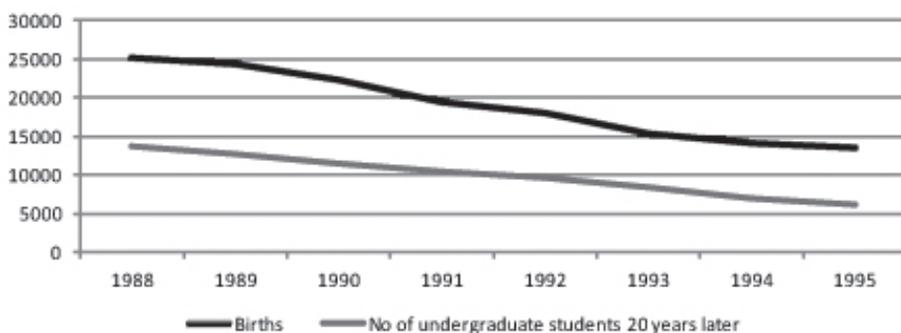


Figure 4. The number of births, 1988–1995, and the number of business students, 2008–2015

Source: *Statistics Estonia, n.d.*

In addition to formal academic education, there were remarkable changes in training methods and management literature during 2010–2015 (Alas *et al.*, 2015):

- Formerly, the managers of the Estonian branches of international companies adopted the practices of the other branches of the company, while today learning has become mutual—more and more representatives from other branches of the group come to learn from the practices of the Estonian units.
- The format of executive training and consultations has changed. During the past five years, Estonian companies have been increasingly participating in the international qualification training market.
- Estonian corporations have sent a number of their managers to study at top universities (INSEAD, LSE, LBS, IMD, IESE, St. Gallen).
- The programmes offered to managers at Estonian universities have gradually gained in popularity.
- There is a remarkable fall in the purchase and reading of management books in the Estonian language, which is the reason for a decrease in the number of authentic and translated books and their circulation figures.
- Estonian managers read more management literature in English.
- Participation in managerial conferences and fairs for practitioners has been steadily increasing.

Therefore, we can distinguish between three periods in the development of business education in Estonia during the last 25 years:

- 1990–1998: explosive interest in business education;
- 1999–2009: controlled developments in curricula, and stabilization;
- 2010–2015: internationalization, practice-oriented training.

Conclusions

During the last 25 years, the Estonian economy has transitioned from a centrally planned economy to a market oriented, globally open, highly competitive economy. Although during these years there has been fast growth and Estonians could tell a lot of success stories, research shows that management practices are still less advanced compared to those in enterprises from the developed countries.

Studies (e.g., Päril, 2006; Mikkus & Žukovits, 2016; CGMA, 2016) have suggested that the integration of sophisticated MCS with innovation strategies would benefit performance. The more intensive competition and high levels of perceived environmental uncertainty in Estonia demand the application and use of more sophisticated MCS in companies.

Investigations show the development of MCS in Estonian companies from the second half of the 1990s onward. As revealed in a number of studies (Haldma & Lääts, 2002; Hammer & Karilaid, 2002), after a rapid departure from the centrally planned economy in 1990–1995, the majority of Estonian companies improved their MCS in 1996–1999 (see Table 2). However, as concluded by Lääts (2011), at the beginning of the 2000s the application of MCS in post-Soviet countries (including Estonia) was still in its infancy. The wider conceptual management accounting changes in Estonia took place in 2000–2007. During this period, companies introduced, for example, flexible budgeting and rolling forecasting, as well as a balanced scorecard approach and market share as a performance indicator.

In the years 2007–2009, during the economic recession, most companies were fighting for survival and tried to improve their business models as well as their MCS (Vadi *et al.*, 2011). Unfortunately, most of them still did not use more sophisticated and balanced scorecard-type integrated MCS at the end of the first decade of the 2000s. The study by Alas and others (2015) showed that

the planning horizon in 2015 is still short in companies belonging to Estonian owners, and only 41 per cent of Estonian companies use more sophisticated MCS (Mikkus & Žukovits, 2016). Their results support the findings that small companies use less sophisticated MCS based mainly on financial indicators. Small Estonian companies usually use only 4–8 different indicators, which gives only a very narrow overview of the company's processes and resources.

Advances in information technology is a key force in developing more sophisticated and integrated MCS. Unfortunately, most Estonian companies are unsure of how to proceed with a migration into the cloud due to a lack of knowledge, security concerns and privacy issues (Käsk, 2016). This means that, for Estonia to compete successfully internationally, more training and education in information technology and especially cloud computing is urgently needed.

Table 2. Changes in MCS and business education in Estonia for 1990–2015

Period	Changes in MCS	Period	Changes in education
1990–1995	Departure from centrally planned economy, the period of “turmoil”	1990–1998	Explosive interest in business education
1996–1999	Fast reorientation, the period of “infancy”		
2000–2006	The biggest changes, reaches “puberty”;	1999–2009	Controlled developments in curricula and stabilization
2007–2009	Surviving the recession, desperate attempts to innovate MCS		
2010–2015	“Growing up”, stabilization	2010–2015	Internationalization, practice-oriented training

The current research once again emphasizes that the main factor facilitating management control developments in Estonian companies is the education and experience of the (top) management. As revealed from a research conducted by Talvet (2013), one reason for the slow development of integrated and more sophisticated MCS could be the lack of knowledge about contemporary management control tools. For example, about 60 per cent of small company managers who participated in the study did not know about the balanced scorecard framework.

By the end of 2016, the situation has changed dramatically, compared to the 1990s. As this study shows, the last decade has brought a different level of internationalization and development in the business environment and business education. As the recent study by Alas and others (2015) has shown, more and more representatives from other branches of international companies are coming to learn from the practices of Estonian units. In addition, during the past five years, Estonian companies have been increasingly participating in the international qualification training market, at fairs and at conferences. Many Estonians have also studied at top universities (INSEAD, LSE, LBS, IMD, IESE, St. Gallen). Furthermore, Estonian managers read more management literature in English and attend international management conferences. The problems associated with developments in MCS, using cloud technology, business education and managerial training are the same in Estonia as in developed countries.

This article provides an overview of statistics and studies completed in Estonia over the last 25 years, analysing and summarizing information from several studies. The most fruitful studies made during and about this period include the longitudinal study completed by Lääts (2011), and two large surveys of Estonian management practices initiated and commissioned by Enterprise Estonia (EAS) in 2010 and 2015.

This study has implications for research, practice and society. The important practical implication of the study is the conclusion that the education of individuals and especially top managers plays an important role in developing MCS in organizations. It is important to offer high-quality education and training courses to managers because information-based management and the value of information will be among the main competitive advantages. To develop the business and economic environment in the country, Estonian entrepreneurs need high-level data processing, analytical and financial education, and practical training courses.

This study offers an overview of the developments during the last 25 years in MCS and business administration education. The resulting analysis and periodization helps better understand the changes and developmental stages. Getting a better overview of the past helps us plan and orientate for the future. The article serves mainly as a literature review that provides a record of a management issue related to transition and globalization in a post-Soviet country. This could stimulate further study of potential ways to improve the use of MCS in the region and beyond.

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