9th International Scientific Conference
RURAL DEVELOPMENT 2019
RESEARCH AND INNOVATION FOR BIOECONOMY
26-28 September 2019, Vytautas Magnus University Agriculture Academy, Lithuania

VYTAUTAS MAGNUS UNIVERSITY AGRICULTURE ACADEMY

Proceedings of the 9th International Scientific Conference Rural Development 2019

Edited by prof. Asta Raupelienė

ISSN 1822-3230 (Print)
ISSN 2345-0916 (Online)

Article DOI: http://doi.org/10.15544/RD.2019.063

IMPACT OF ICT USE ON TIME STRUCTURE OF ADVISORS WORK AT THE LITHUANIAN AGRICULTURAL ADVISORY SERVICE

Linas STABINGIS, Faculty of Bioeconomy Development, Vytautas Magnus University. K. Donelaičio g. 58, LT-44248 Kaunas, Lithuania,, linas.stabingis@vdu.lt

Information and communication technologies (ICT) already several decades is an integral part of business management and accounting data processing. Scientific publications most cases deal with increase the efficiency of calculations and information processing, improvement the quality of accounting information systems, but very little attention is paid to changes in the behaviour of accounting staff resulted by the implementation of modern information processing technologies. Scientific problem is the measuring of impact of the modern information and communication technologies on behaviour of advisors in accounting. Paper provides the results of theoretical analysis of impact, made by ICT on changes in registration and processing of accounting transactions and competences are necessary for accounting specialist. Empirical investigation bases on analysis of the data received during questioning consultants in accounting and economics, working at the Lithuanian Agricultural Advisory Service about the structure of working time allocated for various tasks and on changes in the structure of working time due to the use of ICT.

Keywords: Accounting, information and communication technologies, behaviour of advisors in accountants, changes in work time.

INTRODUCTION

During the last years, computing business information has changed from this basic local data processing into use of international computer networks. Such progress achieved due to rapid technological progress of the computer systems. The architecture of modern information systems cover not only the technical computing, information management, but and use of communication platform for communication inside and outside institutions. Information technology plays a critical role in modern business, especially regarding the accounting function (Efendi, at al., 2006). The initial interest of use of the information and communication technology in accounting was gradually taken for granted – i.e. now is difficult imagine accounting is possible without information technology and the assumption appears that information and communication technology is not only the platform for accounting data processing, but also allows the performance of certain sophisticated queries (Granlund, Mouritsen, 2003). Although, information and communication technology clearly plays an important role not only in accounting (Efendi et al., 2006), but and in management control (Dechow, at al., 2007; Berry at.al. 2009). Fully endorsing these statements, we have to emphasize this relationship not studied enough.

Traditionally, research in Information Systems focuses on the study of information processing, on computer systems security, and on the development of new systems, leaving for further study the relationship between information technology and accounting (Alves, 2010). Based on the review of this publication and empirical data it seems that limited efforts applied for understanding of information and communication technology effects on accounting settings.

Reiter et al. (2014) believes the success of use of information and communication technologies (ICT) for accounting data processing depends on following three factors: the quality of the system, the environment in which this system is functioning and the users' of these technologies. Most cases investigators are concentrated on the assessment of the quality of the system and are analysing functionality and other technical characteristics, such as its performance, usability and reliability (Fotrousi at al., 2017) and environment, which could be analysed from physical, social, economic and some cases even technical point of view (Reiter et al., 2014; Mitra et al., 2011). Less attention paid to end-users behaviour, which according Kujala and Miron-Shatz (2013) could be exemplified by mentioning needs, motivations, expectations, and even moods. Behavioural accounting research has flourished over the past 40 years and vastly improved our understanding of accounting judgment and decision – making process, changes of human behaviour and how it affected quality of accounting information and influenced an organizational processes and social structures (Sutton, 2010). This paper focuses on how improvement of accounting information system influence the behaviour of advisors in accounting and economics at the Lithuanian Agriculture Advisory Service in period from 2003 until 2018.

Scientific problem is the measuring of impact of the modern information and communication technologies on behaviour of advisors in accounting. The purpose of investigation is to identify the factors, influencing changes in accounting information processing by use of information and communication technologies and to estimate the work time structure of advisors in accounting due to use of these technologies.

Main tasks of research are:

Copyright © 2019 The Authors. Published by Vytautas Magnus University. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC-BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

1) To clarify impact made by use of information and communication technologies on improvement the quality of accounting;
2) To clarify understanding of features, actual for advisors in accounting acting in age of information and communication technologies use;
3) To perform analysis of work time structure of advisors in accounting and economics at the Lithuanian Agricultural Advisory Service and to estimate use of information and communication technologies on their work efficiency.

Impact of ICT use on improvement of accounting data processing. Information and communication technologies affects the ability to solve different accounting tasks, but according Taipaleenmäki and Ikäheimo (2013) one factor has largely been ignored by researchers – i.e. the rapidly increasing impact of information technology on all aspects of accounting. In reality, information and communication technologies plays an important or even crucial role in the convergence process of different kinds of tasks, which have been solved by processing various economic, financial and managerial information. Similarly, the influence of information technology on success of accounting data processing valuate and other authors. For example, the Vaassen and Hunton (2009) states that information technology has played and will play a major role in the development of accounting information systems (AIS) by providing "the push that drives accounting activities".

The ultimate purpose of accounting could be classified into two categories: control and decision-making (Zimmerman, 2000). The control function is usually associated with management accounting and decision-making – with both – management and financial accounting. Within management accounting, control encompasses planning, cybernetics, administrative and cultural controls as well as compensation systems, while decision-making involves strategic and operational decisions (Malmi, Brown, 2008). Within financial accounting, control refers to stewardship accounting, in which management is accountable to the stakeholders, especially to investors, dependent on the resources given to them, and decision-making refers to the valuation focus in which information provided to investors to make informed decisions (Hemmer, Labro, 2008). Looking from theoretical point of view, the management accounting and the financial accounting seem to be very different from each other. In practice, their ultimate purpose is similar to that described above: use collected data and processed information for decision-making (management accounting), valuation of results of financial activity (financial accounting) and control of all processes (management and financial accounting).

In order to understand the impacts of modern information and communication technologies on changes of accounting data processing, it is necessary to consider how these technologies and modern systems influence accounting integration and convergence in general. Traditionally, information generated by processing of the financial data, especially financial statements have the stewardship role and allow the shareholders and other persons to understand the financial situation of previous periods and estimate the success of corporate governance. Last year financial accounting has evolved from backward-looking stewardship accounting to its contemporary forward-looking valuation focus, assisting investors in their decision-making (Jones, Luther, 2005; Hemmer, Labro, 2008). But transaction-based financial accounting data could be used as base data not only for financial, but and for management accounting in comparing it with budgets, could be stored in the same databases and be refined, converted and used for control and analysis as well as for decision-making utilizing such means as product-related or customers data (Lukka, 2007).

Based on various studies, modern accounting information systems, which architecture and design is oriented toward integration of management accounting and financial accounting, could be facilitated or even enabled for convergence. Information technology may reduce the time needed for processing transactions, increase the quality of accounting information and as a result may increase the usability of this information (Brazel and Dang, 2008).

By summarizing results of monographic investigation could be made conclusion, the main advantage of information and communication technologies use, especially regarding modern and integrated accounting information systems, allow possibilities to organise and therefore to integrate processing of financial and managerial accounting data. It means, these systems act as a facilitator, catalyst, motivator or even the enabler for the convergence of management accounting and financial accounting (Taipaleenmäki, Ikäheimo, 2013). According Dechow and Mouritsen (2005), it is important understanding the control cannot be studied apart from information technology use having integrated processing of management and financial accounting data. Granlund (2011) states the lack of studies, which analyses the role of information technology on the relationship between management and financial accounting. Similarly, it is lack of studies, which focuses on changes of accounting specialists' behaviour in face of information systems use and integration of accounting (Rom, Rohde, 2007).

Impact of ICT use on required competences of accounting specialists. The use of information and communication technologies fundamentally changes the nature of tasks and the methods have be undertaken these tasks should be completed successfully. Discussing an efficiency of work of advisors in accounting, we have to deal not only technical and technological issues of information system which is used for accounting data processing, follow legal and methodological requirements for preparation of accountability and other reports, but also wide range of competencies of advisors and their abilities to apply their skills when dealing with consumers.

A well-known consulting company in USA "CPA Practice advisor" reviled the following five most important abilities and skills that differentiate successful advisor in accounting from others (Top 5 Skills, 2018): 1) Business Insight; 2) Analytical Abilities; 3) Technologically Savvy; 4) Regulatory Knowledge; 5) Customer Service.

1. Ability to understand the business process. It means that employees of advisory company in accounting, which seeks to be thrive, especially leaders, have be business-savvy and be able to see the "big picture". Top managers and advisors must be an expert in many different aspects of running a business, from hiring and human resources management

to marketing and running customer service, as well as understanding the specifics of consumers' activity and legal regulations of their accounting. In addition, it is important to be adaptable, understanding basics in economics and good business practices, to be able facilitate grows of the units they are advising.

2. Ability to make analysis. Analytical skills can help in provision of multifaceted analysis lead the success in problem solving. These abilities are especially valuable when managing the company of advisors in accounting. The main the main analytical skills are as follows: critical thinking, data analysis, communication and creativity. Analytical skills allow advisors in accounting to identify errors and problems as well as to find out rational solutions.

3. Ability to use newest technologies. Technology is changing nearly each aspect of accounting starting from the use of software tools and continuing with communication with clients. The technology should be upgraded every few years and to follow newest tendencies, achievements and requirements for data safety. Companies of advisors in accounting that do not follow the technological innovation may become uncompetitive very soon.

4. Knowledge of legal and methodical regulation. Accountants have had regulatory knowledge - standards and procedures applicable in an accounting practice of the country and the industry their clients are acting in, including tax regulations and laws affecting client's functioning and financial interests.

5. Skills in customer service management. It means it is not enough for advisor to be just nice to the client.

Customer service skills require more than. Advisor has to maintain the professional relationships, anticipate the client's needs and do the best to retain existing clients. Clients will positively assess the advisory company, which consistently demonstrates that it always is ready to meet all financial needs of clients.

Summarising considerations provided above, it is necessary to point out: advisors in accounting have to do more than calculate numbers and create reports. They have to be leaders in their activity and to possess other skills that help advisory service they are representing to stand out from the competitors.

DATA AND METHODS

Advisors in accounting and economics working at the Lithuanian Agricultural Advisory Service participated in an empirical investigation. This institution provides consultations and other intellectual services for owners of farmers' farms and agricultural and other enterprises specialised in crop production, animal husbandry and forestry. Advisors in accounting and economics provides following services to their clients:

a) Draw up an initial balance sheets,
b) Make registration of transactions on buying and selling of goods and services, payments to and from the bank account or in cash,
c) Check the quality of records in case the client made the data input by himself or herself,
d) Manage fixed asset and stock accounting,
e) Help clients in calculation of salaries for hired employees and employment related taxes;
f) Assist in filling in the VAT and Income Tax declarations and submitting these declarations to the State Tax Institution,
g) Provide recommendations for use of data fixed in accounting registers and for analysis of collected data,
h) Provide consultations on finance management and other economic issues actual for client,
i) Prepare table sheets with statistical data for Farm Accountancy Data Network (FADN).

Advisors take full responsibility for the quality of the service. In addition, the bookkeeping service covered by civil liability insurance. Security and confidentiality of the data ensured.

The respondents, participated in the survey, were asked to provide answers on various questions. Among others there were included questions about the duration of work at advisory service and the structure in percent's of advisors work time for tasks assigning separately in year 2003, 2008, 2013 and 2018:

1) Processing of accounting data provided by client (farmer farm or agricultural enterprise) and preparation of accountability, tax reports and other documents are required;
2) Preparation of the table sheets for Farm Accountancy Data Network (FADN);
3) Communication with owner or representative of client (farmer farm or agricultural enterprise) – i.e. clarifying data or situations, providing consultations are required;
4) Improvement methodological knowledge in accounting and skills in data processing;
5) Improvement knowledge and skills in ICT use;
6) Other activities not covered above.

In addition, there were provided questions about the ways advisors use for improvement of competences and skills as well as time, allocated for improvement of competences and skills.

Methods of statistical analysis were used to process the received data.

RESULTS

The questioning of advisors was organised in March 2019. Forty-three respondents from 204 advisors in accounting and economics working in central and regional offices of mentioned above service fulfilled on-line questionnaire, but only 35 answers were acceptable for investigation.

Four groups of respondents were distinguished according to the duration of their work at the advisory service. The first group included respondents, who had experience of the work in position of advisor in accounting and economics at

advisory service for up to 5 years. The second included respondents, who have experience of work for more than 5, but less than 10 years, the third - respondents who have experience of work for more than 10, but less than 15 years and the fourth – those, who have experience of work at the service more than 15 years. The results of respondents' grouping presented in table 1.

Respondents were asked to provide data on the percentage of their own working time for various tasks assigned to them separately in year 2003, 2008, 2013 and 2018. Data for year 2018 provided all respondents, but data for year 2013, 2008 and 2003 only those advisors, to whom these tasks were assigned at that time. Statistically processed data from this investigation presented in the table 2 and show that in period from 2005 until 2018 by 6.89 percent points increased the share of time allocated to processing of accounting data provided by client and by 7.87 percent points decreased the share of time allocated to preparation of table sheets for Farm Accountancy Data Network (FADN).

Table 1. Groups of respondent (advisors in accounting at Lithuanian Agricultural Advisory Service) participated in the survey **(**source: prepared by the author of this paper**)**

Number of the group	Duration of work at the Lithuanian Agricultural Advisory Service	Number of respondents provided answers	Share of respondents in each group in percent
1	Until 5 years	10	28.6
2	From 5 to 10 years	7	20.0
3	From 10 to 15 years	8	25.7
4	Over 15 years	9	25.7
		35	100.0

Table 2. Share of time in per cents advisors in accounting used for completing assigned tasks at Lithuanian Agricultural Advisory Service in year 2003, 2008, 2013 and 2018 (source: prepared by the author of this paper)

Description of the assigned task	Years, for which the reported structure of working time was typical	Average share of time in per cents advisors in accounting are using for completing assigned tasks
Processing of accounting data provided by client (farmer farm or agricultural enterprise) and preparation of accountability, tax reports and other documents are required	2003	51.13
	2008	53.84
	2013	55.96
	2018	58.02
Preparation of the table sheets for Farm Accountancy Data Network (FADN)	2003	15.13
	2008	12.47
	2013	9.92
	2018	7.46
Communication with owner or representative of client (farmer farm or agricultural enterprise) – i.e. clarifying data or situations, providing consultations are required	2003	13.75
	2008	14.06
	2013	15.36
	2018	16.60
Improvement methodological knowledge in accounting and skills in data processing	2003	9.25
	2008	7.22
	2013	7.36
	2018	7.03
Improvement knowledge and skills in ICT use	2003	6.25
	2008	5.42
	2013	5.71
	2018	4.78
Other activities not covered above	2003	-
	2008	-
	2013	-
	2018	10.00*

* Involvement into other activities with the share of time 10 percent in year 2018 declared only one respondent.

As far as the number of famers' farms, whose data has be presented to FADN, in period of observation left stabile, it is possible to make conclusion efficiency of advisors work by assigning this task increased and this allowed allocate more time for processing of accounting data provided by client. In addition, during the same period by 2.85 percent points increased the share of time allocated for Communication with owners or representatives of clients (farmer farms or agricultural enterprises) and this fact, expectably, increased the quality of provided consultations. The decrease of the share of time allocated for Improvement methodological knowledge in accounting and skills in data processing (2.22 pp) and Improvement knowledge and skills in ICT use (1.47 pp) is not important and, believable, had no any serious impact on quality of advisors' work.

The summarised results of investigation on the Ways used and time allocated for improvement of competences and skills for accounting data processing and ICT use depending on duration of work experience at the Lithuanian Agricultural Advisory Service provided in the table 3.

Most respondents declared attendance the courses organized or paid for by the advisory service as the main way for increasing their competences and skills in accounting data processing (54.5 percent of those whose work experience

at advisory service is until 5 years and 65.6 percent of those whose work experience at advisory service is over 15 years). As an exception is the answers of those advisors, those whose work experience at advisory service is from 5 to 10 years. 68.6 percent of respondents from this group as the main way for increasing their competences and skills declared analysis of legal acts and instructions by oneself. Different situation is seen analysing data about most acceptable ways for improvement ICT use skills. Participation at the courses organized or paid for by the advisory service as the main way for improvement ICT use skills declared only those respondents, whose work experience at advisory service is over 10 years. Other groups of advisors as the main way for improvement ICT use skills declared investigation by themselves.

Table 3. Ways used and time allocated for improvement of competences and skills for accounting data processing and ICT use depending on duration of work at the Lithuanian Agricultural Advisory Service (source: prepared by the author of this paper)

Duration of work at the Lithuanian Agricultural Advisory Service	Ways used for improvement of competences and skills				Time allocated for improvement of competences and skills			
	By attending courses organized or paid for by the advisory service		Analysing legal acts and / or instructions by oneself		By attending courses organized or paid for by the advisory service		Analysing legal acts and / or instructions by oneself	
	For accounting data processing	For ICT use	For accounting data processing	For ICT use	For accounting data processing	For ICT use	For accounting data processing	For ICT use
Until 5	54.5	38.5	45.5	61.5	62.8	49.0	37.2	51.0
From 5 to 10	36.7	31.7	68.6	72.9	70.7	60.6	29.3	39.4
From 10 to 15	64.4	56.1	35.6	43.9	89.4	90.0	10.6	10.0
Over 15	65.6	65.3	34.4	34.7	92.8	97.9	7.2	2.1

The same trends, with even more visible differences, could be seen when analysing the share of time spent on in-service and out-of-hours training. For example, about 90 percent of respondents, whose work experience at advisory service is over 10 years use in-service time for increasing their competences and skills in accounting data processing and even over 90 percent for improvement of skills in use of ICT.

CONCLUSIONS

The main advantage of information and communication technologies use, especially regarding modern and integrated accounting information systems, allow possibilities to organise and therefore to integrate processing of financial and managerial accounting data.

An advisors in accounting have to do not only processing of accounting data and preparation of reports, but and to be leaders in their activity and to possess other skills that help advisory service they are representing to stand out from the competitors.

Improvement of ICT at the Lithuanian Agricultural Advisory Service allowed decrease of the share of time allocated to preparation of table sheets for Farm Accountancy Data Network (FADN) by 7.87 percent points in period from 2005 until 2018. This fact facilitated increase of the share of time allocated to processing of accounting data provided by client by 6.89 percent points and the share of time allocated for Communication with owners or representatives of clients by 2.85 percent points.

About 90 percent of respondents, whose work experience at the Lithuanian Agricultural Advisory Service is over 10 years, use in-service time for improvement their methodical competences in accounting and skills data processing and even over 90 percent for improvement of skills in use of ICT.

REFERENCES

1. Alves M. 2010. Management Accounting and Information Technology – Some Empirical Evidence. *Performance Measurement and Management Control: Innovative Concepts and Practices Studies in Managerial and Financial Accounting,* Vol. 20(4), 429–455. https://doi.org/10.1108/S1479-3512(2010)0000020018
2. Berry A., Coad A., Harris E., Otley D., Stringer,C. 2009. Emerging the mess management control: Are view of recent literature. *The British Accounting Review,* Vol. 41(1), pp. 2–20. https://doi.org/10.1016/j.bar.2008.09.001
3. Brazel J.F., Dang L. 2008. The effect of ERP System implementations on the management of earnings and earnings release dates. *Journal of Information Systems*, Vol. 22, pp. 1–21. https://doi.org/10.2308/jis.2008.22.2.1
4. Dechow N., Granlund M., Mouritsen J. 2007. Interactions between information systems and management control. *Issues in management accounting*. 3rd ed. Essex: Pearson.
5. Efendi J., Mulig E., Smith L. 2006. Information technology and systems research published in major accounting academic and professional journals. *Journal of Emerging Technologies in Accounting*, Vol. 3, pp. 117–128. https://doi.org/10.2308/jeta.2006.3.1.117
6. Fotrousi F., Fricker S.A., Fiedler M. 2017. The effect of requests for user feedback on Quality of Experience. *Software Quality Journal*. 1 – 31. Available at https://link.springer.com/article/10.1007/s11219-017-9373-7 (Accessed on 04/08/2019)
7. Granlund M. 2011. Extending AIS research to management accounting and control issues: a research note. *International Journal of Account Information Systems*, Vol. 12, pp. 3–19. https://doi.org/10.1016/j.accinf.2010.11.001

8. Granlund M., Mouritsen J. 2003. Problematizing the relationship between management control and information technology. *European Accounting Review*, Vol. 2(1), pp. 77–83. https://doi.org/10.1080/0963818031000087925
9. Hemmer, T., Labro, E. 2008. On the optimal relation between the properties of managerial and financial reporting systems. *Journal of Accounting Research* , Vol. 46, pp. 1209–40. https://doi.org/10.1111/j.1475-679X.2008.00303.x
10. Jones T.C., Luther R. 2005. Impact of IFRS on German manufacturing companies. *Accounting in Europe*, Vol. 2, pp. 165–93. https://doi.org/10.1080/09638180500379160
11. Kujala S., Miron-Shatz,T. 2013. Emotions, experiences and usability in real-life mobile phone use. Conference on Human Factors in Computing Systems *CHI 2013*, pp. 1061–1070, Paris, France. Available at https://ehealth-syte.com/wp-content/uploads/2015/10/Emotions-experiences-and-usability-in-real-life-mobile-phone-use.pdf (Accessed on 18/07/2019)
12. Lukka K. 2007. Management accounting change and stability: loosely coupled rules and routines in action. *Management Accounting Research*, Vol. 18, pp. 76–101. https://doi.org/10.1016/j.mar.2006.06.006
13. Mitra K., Zaslavsky A., Åhlund C. 2011. A probabilistic context-aware approach for quality of experience measurement in pervasive systems. Proceedings of the 26th ACM symposium on applied computing, Taichung, Taiwan, 419–424. Available at http://dl.acm.org/citation.cfm?id=1982276 (accessed on 28/07/2019)
14. Malmi, T., Brown, D.A. 2008. Management control systems as a package — opportunities, challenges and research directions. *Management Accounting Research*, Vol. 19, pp. 287–300. https://doi.org/10.1016/j.mar.2008.09.003
15. Reiter U., Brunnström K., De Moor K., Larabi M.-C., Pereira M., Pinheiro A. 2014. Factors influencing quality of experience. *Quality of experience*, Springer, pp. 55–72. Available at https://link.springer.com/chapter/10.1007%2F978-3-319-02681-7_4 (accessed on 16/08/2019)
16. Rom A., Rohde C. 2007. Management accounting and integrated information systems: a literature review. *International Journal of Account Information Systems*, Vol. 8, pp. 40–68. https://doi.org/10.1016/j.accinf.2006.12.003
17. Sutton S.G. 2010. The Fundamental Role of Technology in Accounting: Research Reality. *Advances in Accounting Behavioral Research*, Vol. 13, pp. 1–11. https://doi.org/10.1108/S1475-1488(2010)0000013004
18. Taipaleenmäki, J.; Ikäheimo, S. 2013. On the convergence of management accounting and financial accounting – the role of information technology in accounting change. *International Journal of Accounting Information Systems*, Vol. 14, pp. 321–348 https://doi.org/10.1016/j.accinf.2013.09.003
19. Top 5 Skills Modern Accountants Need in 2019. 2018. Available at https://www.cpapracticeadvisor.com/accounting-audit/news/12435997/top-5-skills-modern-accountants-need-in-2019 (accessed on 16/08/2019)
20. Vaassen E.H.J., Hunton J.E. 2009. An eclectic approach to accounting information systems. *International Journal of Account Information Systems*, Vol. 10, pp. 173–6. https://doi.org/10.1016/j.accinf.2009.10.004
21. Zimmerman J. 2000. Accounting for decision making and control. Boston: Irwin McGraw-Hill.