

On the Use of Arguments and Perspectives in Diffusing IT-Related Innovations in Financial Accounting: An Analysis of Articles in Professional Accounting Journals

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Abstract

This study addresses the diffusion of knowledge of information technology (IT)-related innovations in financial accounting over time. Drawing on argumentation, rhetoric analysis, and innovation diffusion theory, we examine what main arguments and perspectives were used to promote the diffusion of IT-related innovations in financial accounting in articles published in professional accounting journals. In a longitudinal investigation of articles in two Finnish professional accounting journals between 1970 and 2021, we identified four categories of arguments and the related rhetorical means used to diffuse knowledge about IT innovations in financial accounting. Arguments related to savings in costs and time and to the efficient-choice perspective clearly dominated. Taking Finland as a case in point, an illustrative example, our findings provide important insights into how knowledge about IT innovations has been diffused, especially by professional journals.

Keywords

Financial accounting, information technology, digitalization, innovation diffusion, argumentation, rhetorical analysis, historical research, professional journals as mass media

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1 Introduction

This study addresses the diffusion of knowledge of information technology (IT) -related innovations in financial accounting over time. Research on this topic is important because financial accounting is a crucial part of any firm's accounting tasks, comprising bookkeeping, auditing and other practices related to financial accounting, such as invoicing and communication with taxation and other public authorities. Many IT solutions, either new or perceived as new and ranging from the advent of the first computers to robotics, have been introduced into financial accounting in past decades, significantly influencing accounting practice and research (e.g., Applebaum & Nehmer, 2017; Ferguson & Seow, 2011; Gullkvist, 2011; Kosonen, 2005; Ojala, Penttinen, Collins & Virtanen, 2018; Poston & Grabski, 2000). While this research has added to the knowledge of various IT innovations and also of the main stages and phases in their historical development in past decades (Jaatinen, 2009; Jaatinen, Kihn & Näsi, 2021; Alexandersson, Jansson & Jonnergård, 2023), a more comprehensive picture is needed of how the diffusion of knowledge of the innovations was accomplished. Accounting innovations do not necessarily diffuse solely by popular demand; they may also require proponents and communication channels to diffuse successfully (Abrahamson, 1991).

We are interested in how IT innovations have been promoted in professional accounting journals. Our data were collected from the two main professional accounting journals published in Finland between 1970 and 2021, i.e., over the past five decades. Because 99.5 percent of all Finnish businesses are small and medium-sized enterprises (SMEs) with fewer than 100 employees (Statistics Finland, 2018), this fact about the Finnish enterprise context is likely to influence our data. The articles selected were often been targeted at representatives of SMEs and/or their accounting firms rather than just those of large pioneering enterprises.

The IT development in financial accounting during the last half century can be divided into three stages: computerization, the introduction of Internet-based technology and the integration of machine learning and automation (Alexandersson *et al*, 2023). These three stages form a rough line of development, but in our earlier studies (Jaatinen, 2009 and Jaatinen *et al*, 2021), we distinguished seven phases in the development of IT-related innovations in financial accounting in the Finnish SME context: 1) the advent of large computers and minicomputers (since the 1970s), 2) microcomputers and data transfer innovations (since the 1980s), 3) Internet and electronic data transfer innovations (since the 1990s), 4) Single Euro Payment Area (SEPA) and online tax accounting (since the late 2000s), 5) net invoicing (since the 2000s), 6) projects seeking to develop electronic and automated financial reporting since the 2010s and 7) the ideology of the Digi leap (in the 2010s) (Jaatinen *et al*, 2021). These IT-related development phases form the background for our analysis, but here they no longer appear in chronological or other historical order.

Finland, as one of the pioneering and frontrunner countries in information and telecommunication technologies in the 1990s (Karika, 2017; Galabova, 2012), in e-Accounting innovations, such as computerized data transmission, paperless accounting, eInvoicing and B2B NetInvoicing (Lahti & Salminen, 2008; Jaatinen, 2009), digitalization and eAdministration (Ministry of Finance, 2017), is an appropriate example to use as the empirical setting for the present study. Our results provide empirical evidence from Finland, but they also contribute to increasing the understanding of the diffusion of IT innovations in financial accounting in comparable Nordic and other European countries.

This study applies as its theoretical approaches the rhetorical analysis (Perelman, 1996; Kakuri-Knuutila, 2002) and the supply-side perspective of innovation diffusion theory (Rogers, 1962; Abrahamson, 1991 and 1996). A rhetorical approach is used for a detailed analysis of the arguments and rhetorical means used in promoting the IT innovations while innovation diffusion theory provides tools for further analysis. According to innovation diffusion theory, proponents (fashion-setters) disseminate innovations by means, for instance, of articles. (Rogers, 1962; Abrahamson, 1996, 269). Our empirical analysis entails a longitudinal historical investigation of articles published in professional accounting journals focusing on the arguments and perspectives used at different times to promote the adoption of IT innovations in financial accounting.

This study makes several contributions to the accounting literature. Firstly, previous research has largely focused on specific innovations in management accounting, such as Activity Based Costing (e.g., Malmi, 1999; Lukka & Granlund, 2002) and Balanced Score Card (Ax & Björnerenak, 2005) or accounting information systems, such as enterprise resource planning (ERP) systems (e.g., Teittinen, 2008; Lepistö 2015). In contrast, this study focuses on IT innovations in financial accounting; these have been analysed much less. Secondly, previous studies on management accounting innovations have mostly used theories from sociology, economics, contingency theory, and organizational behaviour in particular (Zawawi and Hoque, 2010). A smaller stream of studies has used discourse analysis (Lepistö, 2014), communication (Lukka & Granlund, 2002) and rhetorical literature (Jaatinen, 2009; Lepistö, 2015; Lepistö, Lepistö & Kallio, 2021), or even a virus perspective (Johanson & Madsen, 2019). By contrast, this study uses both rhetorical analysis and innovation diffusion theory. Thirdly, while previous studies have largely conducted cross-sectional analyses of specific innovations, our study addresses the arguments and perspectives used in the diffusion of knowledge of IT innovations in financial accounting over a long period of time. In so doing, our study is also related to accounting history, which has constituted its own sub-discipline for at least half a century¹.

The *specific research question* of this study is: *What were the main arguments and related rhetorical means and perspectives used to promote the diffusion of the IT-related innovations in financial accounting in professional accounting journals?* According to earlier research, media texts guide public opinion, create reality and attempt to convince – consciously or not - the audience of its own version of reality (Fairclough, 1995, van Dijk, 1997, Apostol, 2011). We therefore contend that professional accounting journals provide us with usable data when studying the arguments promoting IT innovations in financial accounting.

The subsequent sections of this paper are organized as follows. The next section reviews our theoretical framework, consisting of argumentation and rhetoric analysis and innovation diffusion theory. The research methods and data are then described, followed by an empirical analysis of the main arguments and perspectives used in the promotion of the innovations. The final section presents the conclusions with their theoretical contributions, practical implications and proposals for future research topics.

¹ Accounting history has its own scientific associations (e.g. the Academy of Accounting Historians, established in 1973, and Accounting History Special Interest Group, AHSIG), international conferences and publications (e.g. the *Accounting Historians Journal* and the *Accounting History*). (See e.g. Goffman, Roberts, and Previts, 1989; Walker, 2005). In addition, papers on the history of accounting have been published in several journals of accounting such as *Accounting, Organizations and Society* (see Napier, 2006) and *Accounting, Auditing and Accountability Journal* (see Hopwood, 1990; Carnegie, 2014). In the 1960s, the Academy of Accounting Historians classified the areas of interest in the history of accounting into 25 items, one of which was already at that time “mechanized accounting and computers” (see Näsi, 1990, 253).

2 Theoretical framework

The theoretical framework of this paper is based on aspects of two theoretical approaches: rhetorical analysis and argumentation as the theoretical-methodological framework (Perelman, 1996; Kakkuri-Knuutila, 2002; Vuori, 2023), and the supply-side perspective of innovation diffusion theory (Rogers, 1962; Abrahamson, 1991 and 1996). Firstly, a rhetorical approach is used to analyse the discursive justifications, arguments and rhetorical means to promote IT innovations in financial accounting. (See Kakkuri-Knuutila, 2002, 233). Secondly, innovation diffusion theory affords frameworks for further interpretations and additional understanding of the diffusion of knowledge about IT-related innovations in professional accounting journals.

New rhetoric (in contrast to ancient rhetoric) can also be called the study of argumentation because it emphasizes the justification of claims as persuasion (Vuori, 2023). Rhetoric is understood as exerting influence on the audience regarding the validity of some argument and an attempt to secure their commitment to it (Jokinen, 1999a, 46). Perelman (1996, 24), one of the first and most important argumentation theorists of the twentieth century, divides audiences into universal and specific. Professional accounting journal articles are targeted specifically at accounting professionals, i.e., at a specific audience.

According to Perelman (1996, 25) statements made to the specific audience will use persuasion, and the argumentation is logical and conditional. Perelman also directs attention to those aspects of the presentation that seek to reinforce or change the audience's perception of things (Palonen & Summa 1996, 10–11.). According to Perelman (1996, 41), authors must always differentiate the starting points of their arguments from the values and arguments already accepted by the audience.

According to Jokinen's (1999b) synthesis, there are many rhetorical means to convince the audience about the person making the argument and about the arguments themselves. For example, the following means can be used to enhance the assertiveness of the person evincing the arguments: 1) distancing their own interests from the argument, 2) establishing themselves as experts and 3) convincing by consensus, an expert statement or research findings. Rhetorical means, such as the following, may be used to increase the validity of the arguments: making things appear as facts independent of the author; convincing by using categories, details or narratives; numerical and non-numerical quantification; use of metaphor, extreme expressions, pairs of contrasts, examples, appositions, repetition; and preparation for counter-arguments (Jokinen, 1999b, 132–155). While some of the means reinforce the assertiveness of the person presenting the arguments, others reinforce the argument itself. In practice, these two aspects are intertwined (Jaatinen 2009, 52). Furthermore, more than one argument is often presented at the same time (Kakkuri-Knuutila & Halonen 2002, 76). Rhetorical analysis can be extended to the introduction of new technologies in organizations (Jaatinen 2009, 51; Lepistö 2015, 205; Lepistö et al, 2021).

Innovation diffusion research is rooted in the early works of Rogers (1962) and Abrahamson (1991) but continues to be highly significant among accounting scholars for explaining how and when knowledge of new management ideas and technology spread (Malmi, 1999; Ax & Bjørnenak, 2005; Bourmistrov, Grossi & Haldma, 2019; Haldma, Näsi and Grossi, 2012). Rogers (1962) defines the diffusion of innovations as the process “by which an innovation is communicated through certain channels over time among the members of the social system.” Abrahamson (1991; 1996, 256) calls those proponents who diffuse innovations management fashion-setters and defines them as “organizations and individuals who dedicate themselves to producing and

disseminating management knowledge.” Fashion-setters disseminate innovations using articles, publications, mass media etc., (although the progress of innovations may be much slower than anticipated, Bjørnenak, 1997). While a variety of publications may contribute directly to the diffusion of management fashions, fashion-setters have also developed their own publications to disseminate various ideas and techniques (Abrahamson 1996, 269).

In this study, innovations are IT-related (business-to-business) innovations, i.e., ‘new production inputs, machines, processes, and techniques adopted by firms or entrepreneurs for their own use’ (Flambach, 1991), which provide new ways of accomplishing financial accounting tasks. Professional accounting journals form communication channels, and the authors of articles are fashion-setters and members of the social system in question.

According to Abrahamson (1991 and 1996), the proponents are likely to use arguments according to four perspectives. Firstly, according to the efficient choice perspective, innovations are adopted because they help adopters achieve organizational goals. Adopters of innovations make independent, rational choices motivated by technical efficiency. Secondly, according to the forced selection perspective, innovations tend to diffuse among groups of organizations when the innovations have the support of powerful organizations outside these groups, such as governmental bodies, labour unions or associations of managers. Thirdly, the fashion perspective expects that under conditions of uncertainty organizations as a group imitate administrative models promoted by “fashion-setting organizations” or “opinion leaders” such as consultancy firms, business schools or business mass media. Fourthly, in the fad perspective, the diffusion of innovations also occurs under conditions of uncertainty when organizations within a group imitate other organizations within that group (Abrahamson, 1991, 592–599). According to Abrahamson (1991, 586), the latter three perspectives can also be used to explain when and how technically inefficient innovations diffuse.

3 Research method and data

Historical research is characterized by the study of times and changes in the past and the research material comprises the remains of the past (see e.g. Heikkinen, 1980; Rasila, 1977). Our study presents qualitative historical research² that uses textual data – media texts as its empirical data sources. Articles published in the two main professional accounting journals in Finland between 1970 and 2021, i.e. covering about half a century, were investigated in order to analyse the rhetorical means of the arguments – and possible counter-arguments – used by the authors to inform and convince their audience (readers of the professional journals) of the advantages of various IT-related innovations in financial accounting at different times. These two journals are *Tilisanomat* (‘Account Magazine’, published since 1979)³ and *Profitti* (‘Profit’); the latter having also been known as *Tilintarkastajalehti* (‘Auditor journal’) until the end of 1970, as *Tilintarkas-*

² On the one hand this study represents traditional accounting history because accounting change is regarded as the modification of technique, accounting is restricted to the tasks of traditional record-keeping, and change is understood as technical improvement, explicable as a better way of achieving a pre-given goal. On the other hand, our study counts as new accounting history due to the theoretical frameworks used (Rhetoric approach and Innovation Diffusion theory) in interpreting the arguments and perspectives used in disseminating innovations. (see e.g. Carmona, Ezzamel & Gutiérrez, 2004)

³ *Tilisanomat* has been published by the Association of Finnish Accounting Firms (Suomen Taloushallintoliitto ry., TAL and its predecessor associations). This is the national union of authorized firms and societies providing financial accounting and management services in Finland. The members of TAL comprise some 800 authorized accounting firms and 3,500 professional accountants, bookkeepers and financial managers. All members of the Association receive the journal free of charge as a membership benefit.

tus ('Auditing') during the period 1971–2012, as *Balanssi* ('Balance') during the period 2013–2016 and as *Profitti* ('Profit')⁴ since 2017. Other professional accounting journals with smaller circulations were excluded, likewise other possible publications, seminar documents, textbooks, etc.

This paper continues research on the history of IT innovations based on the same professional accounting journal data as that used in Jaatinen et al. (2021). They identified for consideration 341 relevant articles mentioning computers and electronic and digital applications in relation to financial accounting and (2) divided the main IT-related developments in financial accounting into two primary stages and seven phases from the 1970s to the present. For this paper, we used the same empirical data but added 19 relevant articles published in the two latest issues of those journals. Therefore, in this study, we had 360 articles to trace the arguments and rhetorical means the authors used to promote and diffuse knowledge about the IT-related innovations in the context of financial accounting.

For the first paper (Jaatinen et al., 2021), a huge number of journal articles identified as relevant were read (at least two rounds of reading) and analysed by the authors. Therefore, when embarking upon the present paper, the authors already were very familiar with the data, which had been discussed several times and from various perspectives. In other words, we had a good pre-understanding of our data, including the backgrounds of the authors. One more round of systematic reading was needed for this paper and discussions among the researchers to reach a consensus on the main arguments and to select representative text samples from the huge amount of empirical material. Several returns to the material were also important to minimize errors and biases (i.e., to improve reliability, Eriksson & Kovalainen, 2008, 292) as well as to ensure accurate descriptions and valid conclusions (Ryan, Scapens and Theobald, 2002, p. 141).

Our empirical analysis starts with the arguments and rhetorical means, which, on the one hand, might be considered a theoretical-methodological choice, but on the other hand, a form of discourse analysis that specifically emphasizes the social relations built into the text between the speaker or writer and their audience (Vuori (2023)). The writers in our data are mostly auditors, accountants or representatives of various institutions; they are among the top professionals in their respective areas of expertise. Table 1 presents the professional or organizational backgrounds of the authors of the articles in our data⁵. This table provides an idea⁶ of whose voice has been heard in professional accounting journals in Finland.

⁴ *Tilintarkastajalehti/Tilintarkastus/Balanssi/Profitti* is the only professional journal on auditing in Finland. The Association of Finnish Auditors (Suomen Tilintarkastajat ry) published it in hard copy until the end of 2016 and thereafter in electronic form on the Association's web page

⁵ The total number of authors - 391 - is greater than the number of articles - 360 - due to the co-authored articles.

⁶ The table was prepared according to the position or organization of the author mentioned in the article, although the author may have several positions and in several organizations and these may change over time.

Table 1 Professional or organizational background of the authors of the articles in our data in two professional accounting journals during the period 1970–2021

DECADES							
Author	1970s	1980s	1990s	2000s	2010s	2020–21	Total
Auditor	8	23	34	18	22		105
Accountant	0	12	17	13	15	3	60
Association ¹	3	2	4	8	33	8	58
Journalist		1	1	10	29	3	44
Software house	1	7	1	2	11	8	30
Government		3	3	7	14	2	29
Others ²	5	9	1	5	1		21
Bank	1	5	8		2		16
Other firm	2	4		3	5	2	16
Academics			1	3	8		12
<i>In total:</i>	20	67	70	68	140	26	391

¹ For example, the Chamber of Commerce, Association of Finnish Accounting Firms, The Finnish Bankers’ Association, and TIEKE Information Society Development Centre

² For example, authors of books and consultants

4 Analysis of arguments and rhetorical means in diffusing IT innovations in financial accounting

In this paper we analyse the arguments and perspectives used in the professional journal articles to promote the diffusion of IT innovations in order to convince the audience to accept the new ideas and IT-related methods in financial accounting. We report our analysis under four headings, which also represent the four main categories of discourses or arguments found in the analysis: 1) cost and time savings through IT innovations, 2) innovations to reduce administrative burden, 3) Finland as a frontrunner in IT innovations and 4) changes in the nature of accounting work.⁷ These four categories represent the authors’ common understanding of the main arguments but apparently, very similar or comparable arguments would have been presented if another research group had done the analysis.

The first and last arguments i.e., ‘cost and time savings’ and ‘changes in accounting work’ were present in the texts in all five decades, whereas the second and third arguments ‘IT-innovations reduce administrative burden’ and ‘Finland is a frontrunner in IT’ were present during the last two to three decades. In the following, argumentation and rhetorical analysis are first presented under each of the four headings, followed by our interpretations concerning the perspectives provided by innovation diffusion theory.

4.1 Cost and time savings through IT innovations

The 1970s marked a turning point in financial accounting technology. Large firms purchased large computers and mini-computers (Ahtiainen, 1988), developed software and diffused knowledge about the new ways of organizing financial accounting tasks (Jaatinen et al., 2021, 91). Only

⁷ References in this part of the article are to be found in the list of References to the data sources following the list of references.

a few SMEs and accounting firms had their own computers in the 1970s and early 1980s. They still used either manual or Taylorix bookkeeping and bookkeeping machines (Jaatinen, 2009, pp. 71–75), and later began to use the services provided by computer service centers and automatic data processing (ADP) companies and banks (Ahtiainen, 1985; Forsblom, 1973).

In the 1970s and 1980s, writing was often technology-focused and readers were reassured that the computer was a technical aid. At this time the writing not only encouraged the acquisition and deployment of computers but warned of the dangers of computers, such as misuse of computer applications (Tuokko, 1989a), the auditability of automated data processing (ADP) systems and dangerous work combinations in financial accounting (i.e., where the same person registers the accounts for the accounting documents, saves them, acts as an operator, updates the files, prints the lists and provides control information to the accounting software) (Karlsson, 1990).

In the 1970s an issue commonly discussed in professional journal articles centered on the costs and benefits influencing companies' decisions to purchase computers and software. *Cost-benefit analysis* was emphasized in the process of ADP acquisitions. The solution selected must yield greater benefits than costs. No mention was made of the problems of scope, measurement, periodization or valuation relating to the profitability calculations of such ADP investments, or, for example, to the length of the period of investment calculations. The following citation illustrates the discussion related to the deployment of automatic data processing:

“Is it rational to use ADP for the above-mentioned tasks, is it profitable, have all the options of ADP been properly utilized. ... It is still rare to be able to calculate the profitability of ADP. Instead, more and more attention is being paid to the analysis of economic efficiency. (Suoniemi, 1970).”

During the 1980s the emergence of microcomputers and the declining costs of computers and software made it economically feasible for SMEs and accounting firms also to procure and use computers for financial accounting tasks. “Why does it make sense for an accounting firm to acquire its own computer?” was a particular issue raised in several articles (e.g., Mäkinen, 1983). As the price of computers began to fall, having one's own computer was seen as a necessity. In 1990 an article described the cost savings as follows:

“Accounting firms have very consistently implemented a strategy of low costs throughout their history. Accounting firms have introduced ADP among others early on, because through that they have been able to lower costs. At first accounting firms used ADP service centres, but during the 1980s the majority changed to using their own computers.” (Mäkinen, 1990)

In professional journal articles, the benefits of IT innovations (such as microfilm and mechanical data transmission in the late 1970s) were very commonly reduced to cost savings from decreased printing and use of paper in accounting. Justification and approval for “bank statements as accounting documents??” (the so-called TITO reform at the turn of the 1990s) was also sought by emphasizing the economic benefit of “paperless accounting”. However, it was acknowledged in the articles that first and foremost it was the banks, which benefitted from the TITO reform and that they sought to reduce their costs since banks did not need to move account transfer forms from one office to another and further to the customers. In 1990, Vahtera (Authorized Auditor, and at the time the most enthusiastic advocate of IT innovations in financial accounting in Finland) rationalized the eagerness of financial institutions to promote the TITO reform by subsequent economic arguments:

“Half a billion transactions annually already go through bank and post giro. If transferring one transfer form from one bank to another and further to the customer takes a cautiously estimated 15 seconds, the annual value of work time saved is 300 Mmark” (=about 50 million Euros]! ...“The sum is enormous, therefore it is understandable that financial institutions leave no stone unturned, so that the new bank statement procedure will also be good from the accountable firm’s point of view.” (Vahtera, 1990.)

At the turn of the new millennium net invoicing was promoted with article titles such as ‘Electronic invoicing brings new intelligence to the accounting firm’ (Launonen, 2007), ‘Paper invoice has no future’ (Gedik, 2008), ‘Net invoicing moves rapidly ahead’ (From, 2009), and ‘Entrepreneurs encouraged to go for net invoices’ (Hurme, 2011). In these articles, presented by the editors of the journals and representatives of the Information Society Development Centre (TIEKE), net invoicing or e-Invoicing development was seen as necessary, inevitable, and as having no alternative (Jaatinen, 2009, 143–147). Both e-Invoicing and the electrification of financial management were initially justified by time and cost savings and later as an important step towards automation in financial accounting. The rapid spread of net invoicing, especially among business-to-business transactions, and huge cost savings were already predicted in 2002 by Vahtera:

“With net invoicing we can reduce the costs by as much as 80–90 percent compared to paper invoicing.”

Vahtera predicted that by 2010, 90% of B-to-B invoicing would entail net invoicing. This failed to materialize due to various obstacles. According to some articles, the lack of a commonly agreed standard was one of the main reasons why the utilization of net invoicing did not develop and spread rapidly.

The time and cost savings of e-Invoicing were also highlighted by numbers, although they were mostly made up and possibly exaggerated. In addition to cost savings, arguments about environmental benefits were emphasized: The following are a few examples of the significant savings and related arguments initially e-invoicing and later on electronic financial administration were expected to yield:

“Processing a paper invoice means on average 30 Euros, a net invoice 10 Euros and automatic solutions drop it to one Euro.” It is also an important point that a net invoice is four times more environmentally friendly than a paper invoice.” (Hurme, 2011).

“More efficient net invoicing could result in savings of about one billion euro in the Business-to-Business sector alone.” (Rytty, 2015).

“Electronic financial administration can halve the costs and bring about significant environmental benefits. In addition to the efficiency benefits of e-Invoicing, the carbon footprint is shrinking to a quarter from baseline (Tenhunen, 2013).

Since the 2010s, a number of projects have sought to develop *electronic financial statements and automated financial reporting* (Jaatinen et al., 2021, 96). The key issue in these projects has been to agree on a standard model for structured data by defining the format in which invoices, receipts and financial statement information can be entered into financial management systems

without manual data entry.⁸ Argumentation in the professional journals was based on huge cost savings and changes?? in the nature of accounting professionals' work:

"Integrated financial management saves billions and facilitates the work of financial management professionals". (Helin, 2009).

Counterarguments to cost and time savings were very rare. One of the authors in the late 1980s referred to investments in IT as a *status symbol* and emphasized them for reasons of *image* and *competitiveness* (Tuokko, 1989b). Another author mentioned the ADP acquisition process as a result of an imitation process rather than of cost-benefit analysis:

"Buy exactly what your competitor has, so you are sure not to be acquiring an inferior system. ... Rather than doing a cost-benefit analysis, one acts upon one's instincts and follows other firms." (Siponmaa, 1989.)

Pauli Vahtera executed a *volte face* back in 2010 and criticized attempts to target cost savings with different IT-related reforms. In his article entitled "The Hope Reform of the Century – A Year Without Reforms", he wrote that there had been a change after change, consuming a great deal of money and time. He referred to the IT-related reforms, such as 'Tax account', SEPA, e-Invoicing, e-financial reporting code and wrote:

"Electronic financial management was supposed to achieve vast savings for companies. With appropriately implemented e-Invoicing some of them have succeeded in significantly reducing their amount of work. But there have been no monetary savings. The price of freedom has been heavy and paid to the system vendors, e-Invoicing operators and banks. ... Every change costs accounting firms and their clients. There are annual fees, monthly fees, upgrade fees, additional module fees. Every change necessitates studying, participation in training, and extra work that the change occasions." (Vahtera, 2010).

In conclusion, arguments of cost and time saving have regularly been used throughout the years to rationalize the acquisition and use of IT innovations. The argumentation reflects the inevitability and necessity of change. The articles were targeted at financial professionals, who no doubt like numbers, efficiency and rational behaviour. Even though in the early years the cost-benefit analysis was mentioned in some articles, concrete analyses of costs were not included in the articles. e.g. analyses of the costs of IT investments and annual running costs, costs of personnel training and maintenance of IT skills were not discussed. In the early decades of computerization, the *misuse of computers*, *audit problems* and *dangerous work combinations* were seen in some articles as threats to computerized accounting. Later, information security issues were raised in the articles, but more generally in relation to digitization and not just accounting.

All in all, *positive argumentation for IT development* was present through the ages and very few counter-arguments (see the basic concepts of argumentation: Besnard & Hunter, 2008) for the huge cost savings were presented. However, one of the most active authors and a former ar-

⁸ The first of these was the *Fully Integrated Accounting (FIA) project*, initiated by the Association of Finnish Accounting Firms (Talouhallintoliitto), some individual accounting firms, a software house and a business school and it promoted the interests of SMEs. The project focused on the automation of financial accounting processes with the aim of building a real-time net economy extending to accounts archiving, auditing and tax requirements.

dent proponent of IT innovations “changed his tune” in 2010, criticizing constant “change after change” and the monthly and yearly fees and continuous learning costs of IT applications. Such a critical approach was very exceptional in the data.

Regarding the perspectives offered by innovation diffusion theory, the authors throughout all five decades emphasized a *rational choice perspective* with aspects based on *technical efficiency and time and cost savings*. Such argumentation fits well with the values of the readership in question. According to Kakkuri-Knuutila and Halonen (2002), more than one argument is often presented at the same time. Cost savings were supported by other arguments, such as environmentally friendly paperless accounting. Arguments such as “paper invoicing has no future”, “net invoicing is advancing rapidly” are rhetorical means to make the innovations appear inevitable and – depending on the person making the argument – may be interpreted by the audience to represent a sort of *forced selection perspective*.

4.2 Innovations to reduce administrative burden

The concept of “*administrative burden*” was much used in the first decade of the 21st century to refer to the administrative work and costs caused by the need to gather, modify and submit financial and other information to public authorities and other third parties, e.g. for taxation, statistics and other official reporting obligations. The argument for reducing administrative burden is rooted in the European Commission’s 2007 Action Programme (Commission of the European Communities, Brussels, 24.1.2007). In Finland, however, the Government Programme of 1999 already stated that the administrative burden on SMEs would be reduced e.g., by improving the opportunities for more efficient data collection and combining the collection of information needed by different authorities (Jaatinen, 2009, 100). The aim of the EU Programme was to reduce by 25% the administrative burden of EU legislation and its implementation by 2012. The Commission estimated that the proposed reductions in reporting obligations could save SMEs an estimated € 1.7 billion per year. In Finland, the chairman of the steering group set up by the Ministry of Employment and the Economy to implement the EU Programme, stated that

“in Finland the administrative burden is about 1.5–2% of GDP, whereas in the EU the average is about 3.5%. It is difficult to reduce from so little, but you can always try to do things better.” (Poskiparta in Rytsy, 2009).

Financial accounting-related reporting was raised to the priority list of the Programme and was considered to be particularly relevant for small businesses. According to the aforementioned chairman of the steering group

“... the programme seems to focus on increasing the use of information technology and standards. ... The aim is to reduce the administrative burden on companies, especially in relation to public authorities.” (Poskiparta in Rytsy, 2009)

Alleviation of administrative burdens saves money and improves GDP. It was estimated that a 25 percent reduction in the administrative burden would increase Finland’s GDP growth by about 0.6% by 2025 (Rytsy, 2009) and that this could be achieved primarily by promoting electronic transactions. In 2010, the Finnish Ministry of Employment and the Economy issued a report on the costs of companies’ financial administration. The following section has been cited in numerous articles:

“Standardized electronic reporting reduces administrative burden by ca. 250 million Euros. Financial statements, annual income tax returns and information needed by Statistics Finland can be taken care of with a just one click in the future.” (Koskentalo, 2013).

Alleviation of administrative burden was a recurring theme in several articles published in ‘Account Magazine’ at the turn of the 2010s. (Ahvenniemi, 2009; Koponen, 2010; Järvinen, 2010; Mutanen 2011). Administrative burden was used as a *rhetorical argument* (van Eemeren & Grootendorst, 1996; Symon, 2000) invoked in favour of developing electronic transactions for taxation, employers’ obligations and other reporting to public authorities. Often the authors referring to reducing administrative burden were representatives of ministries or other public authorities. One of them, a representative of the Ministry of Trade and Industry, wrote in her article “Public administration cuts bureaucracy for businesses”:

“Businesses face a total administrative burden of almost € 2 billion a year in complying with statutory disclosure obligations. The most important ways to reduce the burden are the coordinated development of electronic transactions and the simplification of reporting and notification obligations.” (Mutanen, 2011).

The project manager of the Finnish Information Society Development Centre (TIEKE) was one of the authors and principal actors promoting the idea of standardized electronic financial reporting and using the argument of reducing the administrative burden on businesses when all tasks would be handled at “just one click” or “one touch”. The following titles and texts aptly illustrate her arguments:

“XBRL – Towards e-financial reporting: Aiming to reduce the administrative burden on businesses”. (Koskentalo, 2012)

“Hundreds of millions saved” “Standardized electronic financial reporting reduces administrative burden by around € 250 million. In the future, financial reporting, annual tax returns and the information required by Statistics Finland will be handled at one touch of a button. (Koskentalo, 2013)

XBRL - financial reporting turbocharger. “When all transactions for the financial year are available in the form of a TALTIIO transaction file, electronic financial reports (XBRL) forming will be easy – at one touch of a button”. (Koskentalo, 2014)

Alleviation of administrative burden recurs in a number of articles as an argument to convince the audience of the advantages of rapid digital development - the digi leap - in financial accounting. The “burden” itself represents a metaphor of an oppressive weight and was used as a rhetorical device. Another rhetorical expression --“at one touch of a button” - was used to give the impression that financial accounting functions can be automated and all official obligations can be fulfilled almost effortlessly and without any problems. According to the *efficient choice perspective*, innovations are adopted because they help adopters achieve organizational goals. Seeking relief from the administrative burden represents an efficient choice, and because it concerns the statutory duties, automation is provided as the way to get rid of administrative burden and costs. Most authors were representatives of ministries and other organizations with IT development tasks and therefore their argumentation could be understood from a *forced selection* perspective of the diffusion of innovations theory.

4.3 Finland as a frontrunner in IT innovations

In the journal texts, Finland was often described as progressive compared to other countries - especially in banking and payment technologies and accounting legislation. Finland was the first country in the world to use bar code technology for the transmission of payments. In 1993, an author from the banking sector wrote about the spread of bar code technology in the transmission of payments as follows:

“Bar code technology has been introduced in Finland – the first country in the world – to be used in banks for the transmission of payments. ... The use of a bar code is suitable for all companies that bill by reference. Today, however, the greatest beneficiaries are large companies, whose customers pay their bills with payment machines. (Fagerström, 1993.)

Electronic payments and bank statements as source documents in bookkeeping (i.e., the so-called TITO project) caused a spate of articles in the early 1990s. Finland in its time was seen as pioneering and as the most progressive country in the use of computers in banking:

“Finland is a pioneer in automated banking, with a large number of companies and thousands of individuals using computer links to banks.” (Stenius, Price Waterhouse Oy, 1991)

“TITO is still the most progressive in the world... We can be proud that the legislation regarding the utilization of IT is the most progressive in the world...” (Salmi and Vahtera, 1995)

Accounting legislation throughout the decades was rapidly amended to enable the introduction of new IT-related solutions. As an example, the Accounting Act, which harmonized the Finnish accounting legislation with the European Union 4th and 7th Directives and entered into force on 31 December 1997, permitted companies to use e-Accounting methods without the permission of the Accounting Standards Board (*Kirjanpitolautakunta*) in all accounting tasks and documents except the Financial Accounts of the Accounting Period (*Tasekirja, Annual Report*), which still had to be in paper form. In the preparatory phase, a report was already produced on making the advanced Accounting Act even more advanced, specifically the reform in the provisions of accounting methods. Those tasked with drafting the proposal of the accounting method provisions shared their view in *Account?? Magazine* under the heading ‘PROgressive Accounting Act Reform’:

“The European Union does not have a directive affecting accounting methods. Harmonization could even have a negative effect on reforms as Finnish accounting practice is already now progressive compared to many EU countries.” (Salmi & Vahtera, 1996.)

Despite the progressive legislation and IT development - or because of it - the development has also led to unfavorable operating models for Finland, such as the transfer of financial administration tasks abroad. Large companies have set an example in handling financial management routines. A leading expert of the Association of Finnish Accounting Firms wrote in 2017 that large companies had sought to minimize their costs first by concentrating their financial management in service centers and, as a next step, moving financial management work to countries with cheaper labour costs – Estonia, Poland and India. As for SMEs and accounting firms, the expert in question wrote:

“No work has been moved to foreign countries by the accounting firms taking care of SMEs’ financial management tasks, but many accounting firms have had to compromise on the contribution margin on the basic accounting and payroll services they provide. Price competition has intensified... One solution to these challenges is to increase the degree of automation in financial management... At the same time, it is possible to raise the profile, salary level and attractiveness of the profession of accountant among students”. (Fredman, 2017)

The continuous development of information technology and the rapid adaptation of the accounting legislation were used to create an image of Finland as a progressive country. The texts were based on predictions of the future and the idea that the development would continue, whether popular or not. In an interview, the project manager of the Enterprise Digitalization Project stated:

“Finland has been at the forefront of digitalisation, but maintaining it requires activities.” (Remes, 2021.)

In conclusion, Finland as “a pioneer country in information technology” was a widely used rhetorical means to encourage the readership to accept the coming IT-related innovations. Appealing to pioneering in general is an example of argumentation distancing the author’s own interests from the argument (Jokinen, 1999b). The use of the frontrunner country argument was facilitated by both technological and legislative developments. Non-acceptance would suggest regression or backwardness. From the innovation diffusion theory perspective, an appeal to pioneering can be understood both as a *rational* choice and as a *forced selection*.

4.4 Changes in the nature of accounting work

One important phenomenon in IT development is the change in the work of accountants. Half a century ago, an accountant (bookkeeper) was a respected professional. Since the early days of computerization, the work of an accountant in the journal texts has been largely reduced to performing *routine* tasks – the manual recording of accounting documents – that should be *got rid of*. In 1981, the following was written about the impact of computer technology on accounting work:

Through the development of information processing technology, the majority of ... routine tasks have either been completely eliminated or moved to be performed elsewhere in the organization. The role change has caused a decrease in the number of personnel and a rise in the average level of education... When the development of information systems has simultaneously increased the amount of information available, it is of primary importance that the additional information available is used effectively within the framework of the time freed from routine tasks and, on the other hand, that one also knows how to request additional information. (Vaartimo, 1981)

Over the last decades, there have been recurring notions about the transformation of the work of an accountant from routine work towards financial expert services. Advisory, consulting and expert tasks have been offered to the accounting firms, which were divided into two categories, i.e., mostly old-fashioned ones and, to a lesser extent, those producing expert services. The change was thought to happen very quickly. The following text is from 1986:

Accounting firms are currently changing from traditional bookkeepers to experts in business economics. Some of the accounting firms have already met the challenges of the future, but the vast majority still produce old-fashioned bookkeeping services. In 1990, a typical accounting firm is going to be quite different from today... (Mäkinen, 1986)

The fear of accounting professionals exiting the field as a consequence of IT innovations has been counteracted by raising the status of accountants' work with sentences such as the following under the title "Accounting is nice" by the Editor of Chief of "Account Magazine" in 2013.

"The electrification of financial management has freed accountants from routines to do more productive jobs. Work efficiency has increased. The job description of an accountant is even more diverse and challenging. --- The industry needs young people interested in the financial management of the future, for whom combining strong financial expertise with digital financial management is a motivating challenge." (Ahvenniemi, 2013)

The last texts on IT innovations in financial accounting in our data are about automatics and artificial intelligence (AI) (Fredman, 2017; Fischer, 2017; Remes, 2018a and 2018b), all of which are tools for reducing the (routine) work done by humans. The solution to profitability and other challenges lies in increasing the degree of automation. "Routine tasks are for robots" was a headline in 'Account Magazine' (*Tilisanomat*) in 2018 based on an interview with a manager in a firm providing software robotics for financial and personnel management solutions.

"Interest in software robotics has grown exponentially. ... More and more organizations have found that software robotics can handle unnecessary routine work, allowing people to focus on customer service and developing their own work. In the future, it will be used as naturally as Excel is used today." (Remes, 2018a)

A senior fellow (in Executive Education) expressed doubts about robotics when he wrote in 2019:

"Experiences of applying software robotics to the processes of financial management have varied, to say the least. As soon as something ... changes, the robot typically stops working and needs to be reprogrammed or re-taught by hand." (Tallberg, 2019).

In the debate on change in working life, digitalization, automation and robotics are easily associated with job losses. However, it was also argued that one could see significantly more opportunities in development. "We are going to be a financial management country", says the interviewee, a representative of a software robotics business. "This is now possible by leveraging robotization to automate routines."

"With software robotics, we have the opportunity to create new business and create 5,000 new jobs. In addition to Finnish companies, we can also get foreign companies to transfer their financial administration functions here.... We have a lot of training and research units related to robotics and artificial intelligence. The biggest challenge is applying the know-how in practice." (Remes, 2018a).

A slightly more moderate development emphasizing the need for accounting personnel is seen in the following statements (originating in interviews with accounting professionals):

“In order to utilize robotics, in addition to an expert in technology, you need payroll clerks and accountants to master the substance and processes.” (Remes, 2020a)

“Instead of routine recording work, the job of an accountant is increasingly analysing and interpreting numbers, helping the client company management make decisions.” (Remes, 2020b)

The development of automation may not be so rosy from the point of view of all parties concerned. A column written in 2021 by four accounting professionals takes a stand on the *division of labour between software vendors, accounting firms and their clients*. Software vendors market their products to SMEs i.e., directly to the clients of the accounting firms, implying that online financial reporting happens at one click of a button even though in reality such is not the case. The role of accounting firms between the software vendors and clients in solving problems is overlooked. In their column, these representatives of accounting firms considered the accounting software development needs and wrote:

“It would be reasonable for us accounting firms also to consider our valuable role in software development and marketing. Turnkey and real-time financial management is possible for us, but they still don’t come at the click of a button.” (Backman, Hyvönen, Viertola and Vuorto-Honkala, 2021)

The articles in our data were mostly written by top accounting professionals. Their role and the role of professional journals seem to be to convince accounting professionals that it is important to be progressive in the use of IT innovations. Change in accounting work was always seen as necessary and inevitable, and there was a desire to stay at the forefront of development. Talk about traditional or old-fashioned bookkeepers and reiterated phrases, such as ‘getting rid of routines’ and ‘routines are for the robots’ have been important rhetorical means throughout the decades of convincing readers of the importance of adopting IT-related innovations. Things happen ‘at one touch of a button’ has served as an extreme expression and rhetorical counterpart to routine work.

Keeping up with the developments has been an important argument and other voices have hardly been heard. Accounting professionals have been given new, more demanding consultant and expert roles, although, at the other extreme, the fear of whether robots and artificial intelligence will take the jobs of accountants and payroll clerks has been in evidence. In addition to the new role of accountants, an important question and counter-argument for future developments is the need for and role of all three different parties – software houses, accounting firms, and their clients. What is the role of an accounting firm between the software house and the client in the world of automated financial accounting - when everything is advertized to happen ‘by one click of a button’. Throughout the ages and with the development of IT technology, changes in the work of accountants have been inevitable, and authors in professional accounting journals have encouraged accountants to accept the change as a *rational choice and forced selection*.

5 Conclusions

5.1 Summary and theoretical contribution

This paper addressed the main arguments, rhetorical means, and perspectives invoked to promote the diffusion of IT innovations in financial accounting. The following four main arguments

or discourses were identified in this study: 1) Cost and time savings through IT innovations, 2) IT innovations to reduce administrative burden, 3) Finland as a frontrunner country of IT innovations, and 4) Changes in the nature of accounting work. Throughout the ages, the main argument for promoting different IT innovations has been firmly and primarily based on savings in costs and time. In the first decades, there were *warnings about the dangers of computers and dangerous work combinations*, but on the other hand, investments in ADP were also seen as a *status symbol* and important for reasons of *image and competitiveness*.

When the authors and the target audience consist of accounting professionals, it is natural to emphasize economic arguments, such as savings in costs and time. The authors extracted the starting points of their arguments from among the values and arguments already accepted by their readers (cf. Perelman, 1996, 41). However, cost savings, for one, were very tenuously demonstrated. Instead of calculations, cost savings were predicted or estimated in hundreds of millions and billions and often at the level of the national economy, i.e. *unjustified quantification* and *extreme expressions* were used as rhetorical means (cf. Jokinen 1999b, 132–155) to convince readers about the advantages of adopting new technologies. Counterarguments for cost savings were very rare and the costs of IT investments and maintenance were largely ignored in the articles.

Another key argument since the 2000s has been the reduction of the administrative burden, for which digitalization and electronic transfer of information to the public authorities have been seen as a key tool. This argument was often used by representatives of governmental authorities. Digitalization and being free from paper as well as the recent development of automation and robotics for accounting and financial administration tasks were seen as part of a revolutionary future where there is no room for traditional methods. The “burden” represents a metaphor for *an oppressive weight*. Digitalization and automation as means to take care of accounting tasks just by “one click” or “a one touch of a button” were presented as ways to reduce administrative burden and costs.

In the last three decades, in particular, articles in professional accounting journals were framed with the idea of *Finland being a progressive and leading country* in IT innovations due to technological and legislative developments. This argument creates a positive atmosphere but also pressure and a necessity to accept the innovations.

Quite a lot of research on changes in the work and role of accounting professionals has been presented in the last few decades. In Finland, these changes have been studied especially among management accounting professionals and business controllers (Granlund & Lukka 1997, Granlund & Lukka, 1998, Järvenpää 2001 and 2007, Tuomela & Partanen, 2001, Vaivio & Kokko 2006). The work of management accounting professionals has developed from that of a historian and watchdog to a consultant and a member of the management team and an agent of change (Granlund – Lukka, 1998, 187). This development has taken place in the context of larger companies.

The changing nature of accounting work described in our data concerns accounting professionals, such as bookkeepers and payroll clerks, primarily in the SME context. With the advent of computers, bookkeepers’ manual work turned into pointless routines that were to be got rid of. The debate over reducing routine work and replacing it with consulting and expert work adding value to the clients promotes the idea of being a pioneer and a better professional than a traditional bookkeeper or accountant. *Bookkeepers becoming financial experts and consultants* is a recurring theme in our data. A metaphor referring to the most recent IT developments and automation and to the change in accounting work is that the work can be done at one touch of a button, with just one click. Advanced automation and robotics raise the question of the need for accountants and the division of labour between different parties - accounting-obligated cli-

ents, accounting firms, and software operators - to a new level and assessment in the future. While research on the change in management accounting emphasizes the growth of the controller's role, the bookkeepers' work is described as pointless routines, work that needs to be automated, and a new, more demanding 'expert' role emerges in the texts to convince accounting professionals that there will still be a need for their profession in the future.

Overall, a number of rhetorical means were used in the articles. *Referring, for example, to public reports and legislative reforms* was one of the rhetorical means used to convince readers about the coming changes in organizing accounting tasks. Another rhetorical means was *quantifying with big numbers* to convince the readers about significant cost savings. The term "burden" is a metaphor as such. A burden is heavy to carry, but thanks to the digitalization development and automation one can take care of the *burden with "just one click"*. "A burden" and "just one click" represent a contrasting pair as the rhetorical means used in the articles. According to Harald (1997, 269), mechanism metaphors are used to create an image of the economy as a machine. In our data "costs are saved", "efficiency is improved", and "administrative burden is reduced" are used as mechanisms without further justification.

As to the perspectives of the innovation diffusion theory used to promote IT- innovations, the arguments above were primarily based on economic reasoning. Arguments such as referring to cost-benefit analysis, improving efficiency, saving time and costs, reducing administrative burden, and eliminating unnecessary manual work are in line with Abrahamson's (1991 and 1996) *efficient choice perspective, wherein innovations are adopted because of the benefits of achieving the organizational goals*. In the accounting information system literature, cost-benefit factors have also been shown to be important in ensuring the acceptance of the information technology stage (for a review, see Afsay, Tahriri & Rezaee 2023).

The other three perspectives were used much less in our data to promote the diffusion of the innovations. However, some of the IT innovations, such as SEPA, which was accomplished through legislation, and TITO, a new payment system that was forcibly introduced by the banking sector, clearly represent the *forced selection perspective*. In addition, over-optimistic prediction of rapid change, for example in the case of e-Invoicing, may have caused some readers to perceive the change as necessary and without alternatives, leading to the inclusion of a *forced selection perspective*. In principle, the IT innovations were mostly based on voluntary adoption, but in professional journals, innovations were presented as an inevitable part of future development. Non-acceptance could be equated with backwardness and therefore the introduction of innovations in professional journals can be interpreted from the forced selection perspective of the innovation diffusion theory.

Our data suggest that the proponents of IT innovations used efficient choice and forced selection perspectives, *not fad and fashion perspectives*. According to Abrahamson (1991, 586), fad and fashion perspectives can be used to explain when and how technically inefficient innovations diffuse. Our data focused on the supply-side of new IT solutions and the future, and therefore no technically inefficient innovations could be identified.

In the supply side of innovation diffusion theory, Abrahamson (1991; 1996) calls those proponents who diffuse innovations management *fashion-setters* and defines them as "organizations and individuals who dedicate themselves to producing and disseminating management knowledge." Fashion-setters disseminate innovations using articles, publications, mass media, etc. (Abrahamson 1991, 608 and 1996, 265). In our data, the authors of the accounting articles represented "top professionals", i.e., were well-known auditors, accountants, and representatives of their respective associations, or governmental authorities and thus could make their voices

heard in professional journals. The voices of other potential “fashion-setters” – such as academics, customers of accounting firms or representatives of other external parties were heard much less. Hence, all fashion-setters are not likely to be heard as well in articles published in professional journals. Taken together, the above results contribute to the diffusion of innovation theory by providing insights into the role of professional accounting journals and the perspectives (Abrahamson, 1991 and 1996) used for diffusing knowledge about innovations. Professional journals disseminate information but if only some fashion-setters are given a voice, the information may be excessively optimistic without counter-arguments and any critical views e.g. regarding the costs or continuous changes caused by innovations. Thus, our study supports the idea that the media, including professional journals, construct each subject discussed in particular ways and attempt – consciously or not - to convince the audience of its own version of reality (van Dijk, 1997, Fairclough, 1995, Apostol, 2011).

5.2 Practical implications

Regarding the IT innovations in financial accounting, the main discourse of the past 50 years and more in professional accounting journals has been to seek approval for the adoption of new methods starting from the acquisition of a computer and continuing step by step to electronic and automated solutions and robotics. With few exceptions, IT development was highlighted as inevitable. One might claim that the media message has been to accept the change and to inspire confidence in new IT solutions. At the same time, there is evidence that in real life the progress of some of the IT innovations has been much slower than anticipated (cf. Bjørnenak, 1997). For example, e-Invoicing has taken much longer than anticipated to become widespread. The writers are “fashion-setters”, proponents spreading the “glad tidings of development” to their audiences. The ideas presented in the articles in the professional journals were topical if not ahead of their time.⁹

5.3. Limitations and proposals for future research

Future research could extend the analysis of the perspectives and arguments used in diffusing IT innovations in financial accounting in several ways. First, while this study was rooted in argumentation and rhetoric analysis and the supply-side perspective of innovation diffusion theory, future studies could scrutinize other theoretical perspectives such as the demand-side perspective of innovation diffusion theory. Second, robotics and artificial intelligence are still mostly among the future developments of SMEs and accounting firms and could hence be considered as future research topics, e.g. from the accounting education (quantity and competence requirements) point of view. Third, focusing on IT innovations excluded several other possible perspectives and discourses from the research, for example, the development of standardization and accounting regulation (cf. Hilling, Sandell, Sonnerfeldt, Vilhelmsson 2023), key actors at different times (e.g. national and international organizations) or technological applications and software houses (cf. Alexandersson et al, 2023). They could be addressed in future research. Fourth, in addition to analysing secondary data, future research should rely on data collected directly from practitioners in the field in order to understand the current practices. Finally, comparative research on the IT innovations of financial accounting could be conducted across countries.

⁹ For example, in 2021 the share of the electronic financial management of the total financial management market in Finland was estimated to be roughly just over half (Kalliovaara & Lyytikäinen, *Tilisanomat* 2021).

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