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UTILITY COMPANIES ACCOUNTING: ADVANCEMENTS IN THE LITERATURE

CONTABILIDAD DE LAS EMPRESAS DE SERVICIOS PÚBLICOS:
AVANCES EN LA LITERATURA

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Abstract

Financial information that is homogenized under the endorsement and application of International Financial Reporting Standards (IFRS) does not adequately meet the needs of all contexts and users of financial information. Utility companies possess specific characteristics that necessitate distinct applications of financial accounting, which not only serve to produce reports for investors' decision-making but also inform the setting of fees and facilitate the inspection and monitoring of service provision. This distinction is crucial, as the services provided by these companies are of public interest and essential for societal welfare. This paper conducts a systematic review of the literature to identify and systematize the definitions, users, and topics addressed in research on Utility Companies Accounting (UCA). This inquiry is significant in light of the standardization processes within accounting that cater to the needs of capital market users—an issue that raises dilemmas previously discussed in the literature. The results present a conceptual and interpretative reflection on advancements in UCA research, highlight ongoing discussions, and underscore the importance of accounting in reducing information asymmetry among the various users of utility services. Furthermore, there is a pressing need to disseminate more information tailored to the requirements of utility company management and regulation, as well as to other users, such as citizens, government, and regulatory bodies, which may not align with the standardization processes under IFRS.

Keywords: Regulatory Accounting, Users, Regulatory Companies, Regulatory Commissions.

Code JEL: M41, L97

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Resumen

La información financiera homogeneizada bajo la aprobación y aplicación de las Normas Internacionales de Información Financiera no satisface las necesidades de todos los contextos y usuarios de la información financiera. La industria de servicios públicos domiciliarios (ESPD), tiene cualidades particulares que implican ciertos usos de la contabilidad financiera, la cual no solamente sirve para producir informes para la toma de decisiones de los inversionistas, sino, que también es utilizada en el establecimiento de tarifas y en los procesos de inspección y vigilancia en la prestación de los servicios. Esto es clave, pues los servicios que prestan son de interés público, necesarios para el bienestar de la sociedad. Este artículo hace una revisión sistemática de la literatura, para Identificar y sistematizar las definiciones otorgadas, los usuarios identificados y los temas abordados en la investigación sobre la Contabilidad de las Empresas de Servicios Públicos Domiciliarios (CESPD), esto es importante dado los procesos de estandarización de la contabilidad hacia las necesidades de los usuarios del mercado de capitales, cuestión que podría resurgir dilemas que han sido debatidos anteriormente en la literatura. Los resultados muestran una reflexión conceptual e interpretativa sobre los avances de investigación en CESPD, las discusiones inacabadas y la importancia de la contabilidad para la disminución de la asimetría de la información a los distintos usuarios de la industria de los servicios públicos domiciliarios, así como, la necesidad de divulgar más información adecuada a las necesidades particulares de la gestión, de la regulación de las ESPD y de otros usuarios como la ciudadanía, el Estado y los reguladores, lo que puede no estar en consonancia con los procesos de estandarización bajo las NIIF.

Palabras clave: Contabilidad regulatoria, Usuarios, Empresas reguladas, comisiones reguladoras.

Clasificación JEL: M41, L97

1. Introduction

Financial information has largely been reduced to the needs of investors (Rodrigues & Craig, 2007). Some authors contend that the perceived usefulness of financial information for decision-making by accounting standards issuers is overstated, suggesting that capital providers increasingly rely on alternative sources of information (Lev, 2018). Research on the production and usability of accounting and financial information is limited. Additionally, studies identifying the information requirements that adequately address users' needs are also insufficient (Van Helden & Reichard, 2019; Young, 2006).

According to Gómez-Villegas (2004, p. 112), the international accounting approach “takes a limited and very simplified view of the role of information.” Consequently, it is essential to identify and reflect on the contexts and users whose needs are not being met by the financial information homogenized under the endorsement and implementation of IFRS (Nobes, 2015).

Utility companies (UCs) possess specific characteristics that necessitate distinct applications of financial accounting, which not only serve to produce reports for investors’ decision-making but are also utilized in setting fees and monitoring the provision of services (Galetovic & Sanhueza, 2002). Therefore, it is vital to analyze the use of financial accounting for the control and decision-making of various industry users, as the services they provide are of public interest and essential for societal welfare.

Research on the uses of accounting and financial information predominantly focuses on financial markets, capital providers, and managers’ requirements (Rodrigues & Craig, 2007). However, it pays less attention to other contexts and users, such as the public sector, public managers, citizens, customers, and regulators, among others (Giacomini, Sicilia, & Steccolini, 2016). Similarly, there have been few studies addressing the uses of Utility Companies Accounting (UCA) and the needs of its users.

In this context, the objective of this study is to identify and systematize the definitions provided, the users identified, and the topics addressed in the literature on UC accounting research. The methodological approach involves a systematic literature review, followed by a conceptual interpretation and reflection on the results (Siddaway, Wood, & Hedges, 2019; Van Helden & Reichard, 2019).

The document is structured as follows: after this introduction, a discussion of the concept of financial accounting information users will be presented, followed by an outline of the methodology in the third section. The fourth section will detail the bibliographic background of the literature review. Finally, the fifth section will present the results, which describe the concepts used in regulatory accounting, identify the problems addressed in the literature, and characterize the users of UCs. The document will conclude with a discussion and conclusions.

2. The Emergence of the Concept of the User in Financial Accounting

For many years, until the first half of the twentieth century, accounting was primarily tasked with measuring and representing income and corporate wealth. However, as accounting evolved into a science, the increasing utilization of statistics, game theory, and decision theories led to the development of multiple methods for measuring and representing the same facts. This shift prompted discussions surrounding the issue of uniformity, a concern emphasized by the Securities and Exchange Commission (SEC) due to the potential lack of reliability stemming from the plurality of accounting policies and representations. Consequently, efforts were made to reduce the diversity of accounting processes. Several professionals argued that a significant problem was the absence of clear accounting objectives and purposes, which gradually connected users as a relevant element in the objectives of financial reporting (Young, 2006).

The advisability of aligning financial information with investors’ needs has been academically considered since 1961 (Staubus, 1961). In the early 1970s, the American Institute of Certified Public Accountants (AICPA)

established a working group to specify the objectives of financial statements, comprising several experts and regulatory entities. This group concluded that the objective of financial accounting is to provide useful information for economic decision-making, primarily serving those users who lack the authority or ability to obtain internal information, with a focus on investors and creditors, while placing state managers and regulators in a secondary position. The Financial Accounting Standards Board (FASB) and other regulatory bodies subsequently adopted this position (Young, 2006).

Young (2006) notes that some academics and entities resolved differences through a needs-equating strategy, arguing that the same information could serve multiple decision-making purposes. In this context, the FASB suggested that information addressing the needs of investors and creditors was generally beneficial to other stakeholders (Young, 2006), a premise that currently underlies the conceptual framework of IFRS as well (Foundation IFRS, 2018). Consequently, the scope of financial statements was narrowed to decision-making, predominantly catering to the needs of investors and creditors.

Young (2006) further argues that in 1978, the Board established that financial information was a tool, thus requiring users to learn how to utilize it. The issue of financial statements being read but not effectively used, or misused, is not an inherent problem of the tool itself. This perspective implies that the usability problem of information arises from users' understanding rather than the nature of accounting as a tool (Van Helden & Reichard, 2019). "Readers who failed to follow the provisions of the model could easily be dismissed as irrational and/or ignorant" (Young, 2006, p. 592). Such an argument effectively silences discussions regarding conflicts and asymmetries caused by accounting standards (Sunder, 2010).

The rationale for comparability and uniformity has justified the homogenization of accounting practices and is frequently invoked to critique accounting practices and specific financial statements, which are required to address the needs of users beyond just investors (Young, 2006). It is suggested that other users should adapt to investor-oriented information, as tailoring information for specific users incurs additional costs for organizations.

In this context, the divergence of particular information needs for other users is overlooked and reduced to the rationality of financial market participants (Biondi, 2018). This issue has been the subject of discussion in recent years, as some authors assert that it exacerbates information asymmetries among neglected users and generates challenges across industries and sectors that require specific information (Biondi, 2018; Gómez-Villegas, 2004).

3. Methodology

Among the existing literature reviews on Utility Companies Accounting (UCA), Mason's (1936) review stands out; it examined US Supreme Court cases pertaining to UCA discussions from 1878 to 1934. A more recent work is Cooper's (1998), which provided an overview of the privatization and regulation of utilities in the UK, including several publications on the regulatory accounting debate in England. No further recent literature review research on UCA was identified.

The topic of UCA encompasses a highly specialized area of accounting knowledge, focusing on an economic sector composed of a limited number of generally large companies characterized by high complexity. Despite its economic significance, scientific output in this field remains restricted,

as its monopolistic nature limits both the number of companies involved and the number of professionals dedicated to its study, further constraining the publication of specialized scientific articles.

The literature review conducted on this topic, given its economic importance and specialized nature, revealed limited scientific output in academic journals across various levels. While the methodology applied adhered to the principles of a systematic literature review, it differed slightly as the context necessitated a more exhaustive and detailed search, requiring an expansion of the databases utilized and an extended analysis period. The rigor and time invested in data extraction, review, and analysis were essential for identifying relevant scientific studies in this area; however, it is possible that some studies may have been overlooked.

According to Stechemesser and Guenther (2012) and Siddaway et al. (2019), the purpose of a systematic review is to comprehensively locate and synthesize research developed on a specific topic to understand the discussion, systematize findings, and identify consensus in the literature.

The systematic review was conducted in four stages (Stechemesser & Guenther, 2012). Firstly, research questions, search functions, and databases were selected. The criteria for literature inclusion and exclusion were established. The guiding questions for the systematic review were: ***What is meant by UCA? And what are the most relevant UCA users identified in the literature?***

The search for accounting in the public utilities industry specifically relates to water, energy, gas, and telecommunications companies; therefore, the search terms included: “utilities accounting,”

“regulatory accounting,” “water company accounting,” “energy company accounting,” “gas company accounting,” and “telecommunications company accounting.” Papers related to these terms in their titles, abstracts, or keywords were selected. These terms were searched in three languages (English, Spanish, and Portuguese) across the following databases: JSTOR, Scopus, EBSCO, WoS, ScienceDirect, SciELO, and Redalyc.

Secondly, the criteria for reviewing, extracting, including, and excluding documents were outlined, ensuring that the subject matter primarily focused on accounting. Thirdly, the selected documents were thoroughly analyzed to extract relevant data, identify the concept of UCA, systematize the issues addressed, and characterize the relevant users. Finally, the findings were synthesized.

4. Results

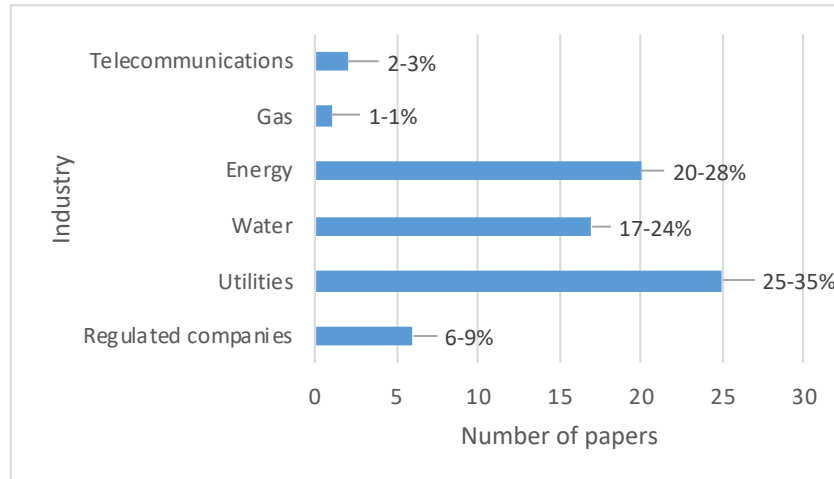
4.1 Bibliometric Analysis

Eighty-eight papers were retrieved, of which 16 focused on Activity-Based Costing (ABC), cost accounting, and regulation and privatization were excluded due to their failure to provide any conceptual discussion on UCA or to establish a position on information users, thus not addressing the inquiries of this study. This left a total of 72 papers, 69% of which were in English, 26% in Spanish, and 7% in Portuguese. Among these papers, 24% employed a quantitative methodology, while 77.1% utilized a qualitative approach.

The retrieved papers addressed various services within the utilities industry (see Figure 1).

Some focused on the accounting practices of regulated companies in general, including the railway sector and utility companies, while others specifically addressed the utility company sector, with particular emphasis on those providing water and sewerage, energy, gas, or telecommunications services.

Figure 1. Number of papers published by industry



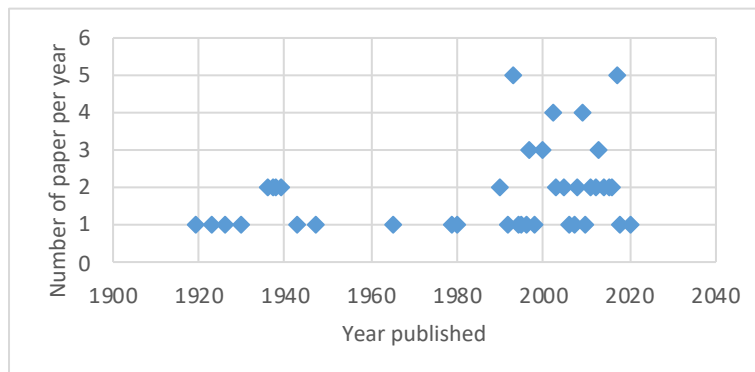
Source: author’s own elaboration

4.2 Background of UCA publications

Of the 72 selected papers, the oldest source dates back to 1919, while the most recent was published in 2021, indicating that the literature review spans a century. This extensive timeframe allowed for the observation of several historical elements regarding how UCA has been shaped, the challenges faced during each period, and the regions of origin of the publications.

As illustrated in Figure 2, two distinct trends emerge in the publications: the first trend occurs between 1919 and 1944. Subsequently, there is a notable lack of interest in UCA until it regained prominence after 1990.

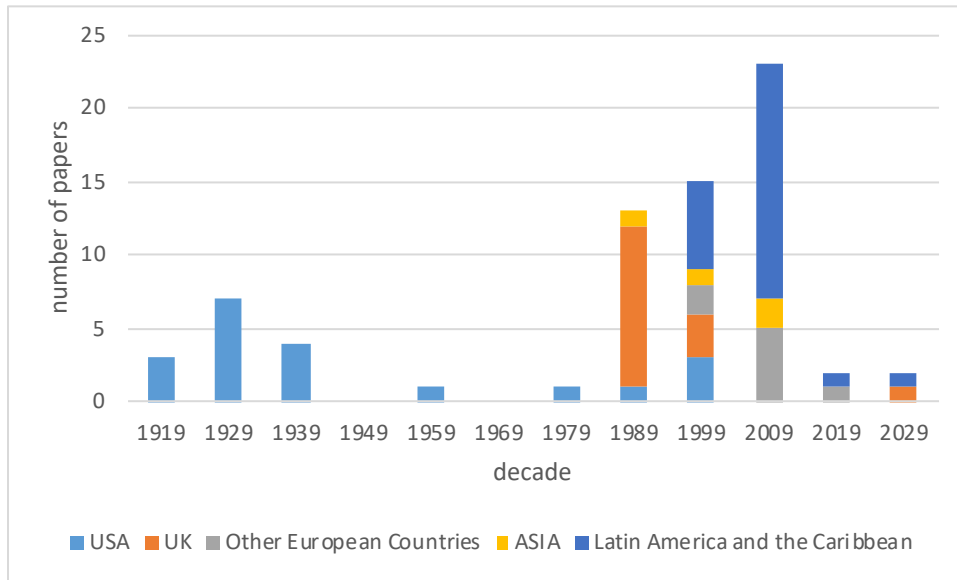
Figure 2. Number of UCA papers published per year



Source: author’s own elaboration

The interest in UCA studies during the first publication trend is notably concentrated in the United States (see Figure 3), largely due to the legal disputes between regulatory committees and regulated companies. The *Smyth v. Ames* case in 1898 established that rates should be based on the fair value of the property, which initiated a heated legal confrontation where discussions surrounding accounting techniques played a significant role (Grout, Jenkins, & Zalewska, 2014; Jarrell, 1979; Preston & Vesey, 2008).

Figure 3. Number of papers published by decade and country



Source: author’s own elaboration

Legal debates took place in court, adding a new perspective to accounting matters and fostering disputes among regulators, regulated companies, experts, analysts, academics, and judges. These debates centered around the methodologies for asset measurement, expenditure and income classification, account segregation, accounting uniformity, asset impairment, and other issues affecting fee-setting (Cooper, 1998; Mason, 1936).

After 1944, the U.S. Supreme Court assigned the responsibility of fee setting to regulatory committees, which shifted the focus of the debate from valuation and accounting to the calculation of fees. This issue was subsequently addressed by economists, leading to the emergence of theories and research within the context of utilities companies (Grout et al., 2014; Preston & Vesey, 2008).

Following the ascendance of the Conservative Party in the UK in 1979, a privatization proposal was introduced, with utilities companies playing a prominent role. This proposal expanded to various countries around the world (Castaño Guillén, 2006, p. 84). In response to bureaucratization and managerial challenges within public administration, privatization promised increased competitiveness, which was expected to result in improvements in quality, technology, and lower tariffs.

Following the wave of privatization between 1980 and 1990, issues related to increased fees and quality problems emerged concerning private utility monopolies or oligopolies.

Economic theory attributed these problems to information asymmetries faced by regulators, agency theory, state capture, and asset measurement challenges (Laffont & Tirole, 2001). This context once again highlighted the relevance of accounting in explaining the failures of utilities companies, thereby encouraging further research in the field.

Since 1990, publications on UCA have predominantly originated from the United Kingdom and subsequently from other countries worldwide. Table 1 provides a classification by journal, country of origin, number of publications per journal, and the decade in which each article was published. The affiliation and country of origin of the journals indicate that the publication trend initially stemmed from the U.S., before shifting to the UK and other countries. In 1993, the journal “Financial Accountability & Management” published a special issue on “UC Accounting, Finance and Auditing” (Vol. 9, No. 2), which featured five papers, three of which were focused on UCA.

Table 1. Journals, country of origin, contribution per decade

Journal	Country	Qty	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	2010	2020	2021
The Journal of Accountancy	US	1	1												
Michigan Law Review	US	2		1	1										
The Journal of Land & Public Utility Economics	US	1		1											
The Accounting Review	US	4			2	1					1				
The American Economic Review	US	1			1										
The Quarterly Journal of Economics	US	1			1										
The Yale Law Journal Company	US	1			1										
Journal American Water Works Association	US	1			1										
The Journal of Business of the University of Chicago	US	1			1										
Harvard Law Review	US	1			1										
Southern Economic Journal	US	1				1									

Journal	Country	Qty	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	2010	2020	2021
Law and Contemporary Problems	US	1						1							
Journal of Accounting and Economics	Netherlands	1							1						
Financial Analysts Journal	US	1								1					
Australian Journal of Management	Australia	1									1				
Accounting and Business Research	UK	1									1				
Financial Accountability & Management	US	7									5	1	1		
Utilities Policy	UK	3									2		1		
Fiscal Studies	US	1									1				
Accounting, Organizations and Society	UK	4									3	1			
Managerial Auditing Journal	UK	1									1				
Contaduría (Universidad de Antioquia)	Colombia	1										1			
Journal of Accounting and Public Policy	Netherlands	1										1			
Partida doble	Spain	1										1			
Anales de estudios económicos y empresariales	Chile	1										1			
Estudios Públicos	Chile	2										2			
SSRN	Netherlands	2										1	1		
ECLAC	Chile	3										2	1		
Public Money and Management	UK	1										1			
CIS Energy & Mining Law Journal	Russia	1										1			
Revista Regulación de agua potable y saneamiento básico.	Colombia	1										1			

Journal	Country	Qty	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000	2010	2020	2021
The service industries journal	UK	1										1			
redLac	Latin America	1										1			
Revista Contabilidade Vista & Revista	Brazil	1										1			
Revista Internacional Legis de Contabilidad y Auditoría	Colombia	1											1		
Apuntes contables	Colombia	1											1		
Sociedade, Contabilidade e Gestão	Brazil	1											1		
Advances in Scientific and Applied Accounting	Brazil	1											1		
International Journal of Business and Social Science	US	1											1		
Registro Contábil		1											1		
Revista de contabilidad	Spain	1											1		
Procedia Economics and finance	UK	1											1		
Revista Brasileira de contabilidade	Brazil	1											1		
Cuadernos de Contabilidad	Colombia	2											1		1
Accounting, Auditing & Accountability Journal	UK	2									1		1		
International Journal of Public Sector Management	UK	1											1		
Estudios Gerenciales	Colombia	1											1		
R. Cont. Fin. – USP, São Paulo	Brazil	1											1		
Criterio libre	Colombia	1											1		
Water	Netherlands	1												1	
TOTAL		72	1	2	9	2	0	1	1	1	16	18	19	1	1

Source: author's own elaboration

The earliest papers published between 1919 and 1944 demonstrate a notable trend of referencing U.S. Supreme Court cases (see Table 2). Subsequently, this trend has been characterized by an emphasis on the literature and economic theories.

Jarrell’s 1979 publication, which examined the impact of regulation on UCA between 1917 and 1922 in the U.S. and its effect on fee increases in the energy services industry, was revisited in the 1990s. It argued that the regulatory process could lead to the manipulation of accounting measurements to influence shareholder profit rates (Arthur, 1990; McInnes, 1990).

UK authors such as McInnes (1990), Vass (1992), Thomson (1993), and Whittington (1994) reinstated the debate on asset accounting measurement, its implications for impairment, and, consequently, its impact on fees.

Additionally, scholars from other countries, including Japan’s Yamamoto (1993) and Russia’s MGee (2005), contributed to this discourse.

The debate surrounding UCA measurement problems emerged during the first decade of the 21st century in Latin America, where the works of Galletovic & Sanhueza (2002) and documents from the Economic Commission for Latin America and the Caribbean (ECLAC) have played a crucial role. By the second decade of the 21st century, the controversy regarding accounting standardization under IFRS gained traction, particularly in Brazil, where the energy regulatory commission did not accept the terms outlined in IFRIC 12. Publications by Brugni et al. (2012) and Cruz et al. (2009) are particularly relevant to this issue.

Table 2. List of publications, authors, and references

#	Authors	Use of References from the List	Cv	Ca	Cr
1	Clader, (1919)		0	0	1
2	E.C.G., (1923)		0	0	5
3	Nash, (1926)		0	0	2
4	Bauer, (1930)		0	0	0
5	Howard, (1936)		0	0	41
6	Mason, (1936)		0	0	33
7	Chazeau, (1937)		0	0	4
8	Morehouse, (1937)		0	0	94
9	Morehouse, (1938)		0	0	2
10	Troxel, (1938)		1	0	56
11	Braunstein, Johnson, (1939)		0	0	59
12	Haun, (1939)		0	0	90
13	Clemens, (1943)		0	0	23
14	Scott, (1947)		0	0	0
15	Price, Walker, Spacek, (1965)		0	0	75
16	Jarrell, (1979)		4	0	52
17	Norby, (1980)		0	0	4

#	Authors	Use of References from the List	Cv	Ca	Cr
18	Arthur, (1990)	Jarrell, 1979	0	1	26
19	McInnes, (1990)	Jarrell, 1979	5	1	24
20	Vass, (1992)		5	0	38
21	Yamamoto, (1993)		1	0	12
22	Thomson, (1993a)	McInnes, 1990	5	1	27
23	Vass, (1993)	Vass, 1992	2	1	57
24	Lapsley, (1993)		0	0	4
25	Thomson, (1993b)	Thomson, 1993;	1	1	44
26	Whittington , (1994)		4	0	7
27	Ogden, (1995)		3	0	79
28	Loudder, Khurana, Bostsman, (1996)		1	0	33
29	Newbery, (1997)	Whittington, 1994	2	1	5
30	Puxty, (1997)	McInnes, 1990	1	1	20
31	Ogden, (1997)	Ogden, 1995	1	1	76
32	Shaoul, (1997)	Ogden, 1995; Vass, 1992; Thomson, 1993; Vass, 1993	0	4	64
33	Cooper, (1998)	Lapsley, 1993; Loudder et. al, 1996; Ogden, 1995; Vass (1992, 1993); Thomson, 1993; Whittington, 1994; Yamamoto; 1993	0	8	71
34	Cuervo, Gómez, Pul-garín, (2000)		0	0	10
35	Arnold, Hartung, (2000)	Jarrell, 1979	0	1	54
36	Caridad, Cam-pos, (2002)		1	0	14
37	Campos, Rico, Iglesias, (2002)	Caridad, Campos, 2002	0	1	21
38	Galectovic, Sanhueza, (2002)		4	0	39
39	Bustos, Gale-tovic, (2002)	Newbery, 1997; Galectovic, Sanhueza, 2002	2	3	22
40	Beekes, (2003)	McInnes, 1990; Whittington, 1994	0	2	58
41	Jouravlev, (2003)	Bustos, Galetovic, 2002; Galectovic, Sanhueza, 2002	4	2	160
42	Conrad, (2005)	Lapsley, 1993; Thomson, 1993; Puxty, 1997; Vass, 1992; Whittington, 1994;	0	0	24
43	McGee, (2005)		0	0	25
44	Vásquez, (2006)	Jouravlev, 2003	1	0	11
45	McGee, (2007)		0	0	41
46	Vinnari, Nasi, (2008)		0	0	47
47	Preston, Vesey, (2008)	Troxel, 1947	0	0	41
48	Picazo, et. al, (2009)		1	0	29
49	Pompilio, et. al, (2009)	Jouravlev, 2003; Galectovic, Sanhueza, 2002	0	0	16
50	Fernández, et. al, (2009)	Jouravlev, 2003	1	0	54
51	Cruz Ferreira, et. al, (2009)		2	0	21
52	Jara, et. al, (2010)		1	0	16
53	Amador, (2011)	Galectovic, Sanhueza, 2002; Newbery, 1997; Vásquez, 2006	0	0	31
54	Hantke, Jouravlev, (2011)	Jouravlev, 2003; Fernández, et. al, 2009	0	0	53
55	Brugni, et. al, (2012)	Cruz Ferreira, et. al, 2009	3	0	32

#	Authors	Use of References from the List	Cv	Ca	Cr
56	Tiscini, Marti-niello, (2012)		1	0	40
57	Martelleto, Rodrigues (2013)	Brugni, et. al, 2012; Ferreira, et. al, 2009	0	0	27
58	Suzart, et. al, (2013)		1	0	13
59	Carvalho, et. al, (2014)	McInnes, 1990; Brugni, et. al, 2012;	0	0	36
60	Ramírez, Valls, (2014)		0	0	6
61	Vojackova, 2015 (2015)		0	0	8
62	Hooks, Tooley, (2015)	McInnes, 1990; Ogden, 1997; Vass, 1992	0	0	32
63	Damacena, et. al, (2016)	Brugni, et. al, 2012; Suzart, et. al, 2013; Tis-cini, Martiniello, 2012	0	0	16
64	Kupper, Pe-dell, (2016)		0	0	63
65	Damacena, et. al, (2017)	Brugni, et. al, 2012;	0	0	58
66	Jollands, Quinn, (2017)		0	0	91
67	Pawsey, Za-hirul, (2017)	Picazo, et. al, 2009	0	0	97
68	Orellana, Azúa, (2017)	Jarrell, 1979; Jara, et. al, 2010	0	0	27
69	Moreira, et. al, (2017)		0	0	36
70	León, Suárez, (2018)		0	0	41
71	Osorio-Agudelo, et. al, (2020)		0	0	72
72	Rincón, Gómez (2021)	Kupper, Pedell, 2016; Orellana, Azúa, 2017;	0	3	68

Cv: Number of times referenced in the list, Ca: Number of references to the list, Cr: Number of references. Source: author’s own elaboration

4.3 Topics addressed in UCA literature

UCA literature has provided discussions on various topics relevant to accounting practices, including the fair value debate, fair value measurement rates, the necessity of depreciation to recognize asset usage, the need for an accounting information system, and the establishment of a uniform chart of accounts specific to this industry. Additional subjects are detailed in Tables 3 and 4.

Table 3. Topics addressed in the papers

A	Uniformity of accounts in the utilities industry
B	Appraisal of fixed assets (asset measurement)
C	Fair Value
D	Impairment
E	Segregation of accounts (regulated and unregulated)
F	Comparability of Financial Statements

G	Assessment of UCs acquired
H	Increase in fees for asset valuation
I	Inflation
J	Political costs. Accounting measures determine the results of the regulatory process
K	Special accounting for regulated industries
L	Accounting changes due to privatization, Accounting harmonization
M	Disclosure of information on Quality, performance, costs, management and other information
N	Stranded assets and excessive expenditure
O	Information asymmetry
P	Cross-allowance
Q	The need for a structure and costs, budgets, forecasts disclosure
R	Standardization of accounting frameworks for the UC industry
S	Concession Contracts
T	Accountability, Disclosure of information, opportunity

Source: author’s own elaboration

Table 4. Paper number by subject and year

A	1, 1919	3, 1926	8, 1937	9, 1938	10, 1938	14, 1947	15, 1965	22, 1993	36, 2002	37, 2002	41, 2003	47, 2008	50, 2009							
B	2, 1923	13, 1943	16, 1979	22, 1993	23, 1993	26, 1994	29, 1997	42, 2005	47, 2008	64, 2016	69, 2017	72, 2021								
C	2, 1924	6, 1936	7, 1937	10, 1938	16, 1979	47, 2008	55, 2012	67, 2017	68, 2017	69, 2017	72, 2021									
D	3, 1926	4, 1930	5, 1936	6, 1936	7, 1937	11, 1939	12, 1939	13, 1943	22, 1993	23, 1993	26, 1994	29, 1997	47, 2008	64, 2016						
E	10, 1938	15, 1965	20, 1992	21, 1993	34, 2000	50, 2009														
F	15, 1965																			
G	16, 1979																			
H	16, 1979	17, 1980																		
I	17, 1980	23, 1993	26, 1994																	
J	18, 1990	19, 1990	22, 1993	23, 1993	25, 1993	26, 1994	28, 1996	30, 1997	32, 1997	33, 1998	35, 2000	40, 2003	41, 2003	42, 2005	46, 2008	53, 2011	58, 2013	62, 2015	64, 2016	72, 2021
K	20, 1992	55, 2012	65, 2017																	
L	22, 1993	24, 1993	25, 1993	27, 1995	28, 1996	31, 1997	32, 1997	40, 2003	42, 2005	46, 2008	50, 2009	62, 2015								
M	23, 1993	27, 1995	31, 1997	48, 2009	67, 2017	71, 2020														
N	28, 1996	35, 2000	41, 2003	47, 2008																
O	33, 1998	37, 2002	38, 2002	39, 2002	40, 2003	41, 2003	43, 2005	44, 2006	45, 2007	49, 2009	50, 2009	53, 2011	54, 2011	69, 2017						
P	33, 1998																			
Q	31, 1997	34, 2000	36, 2002	37, 2002	50, 2009	53, 2011	64, 2016	66, 2017	71, 2020											
R	28, 1996	34, 2000	38, 2002	41, 2003	43, 2005	51, 2009	52, 2010	55, 2012	56, 2012	57, 2013	58, 2013	59, 2014	60, 2014	61, 2015	63, 2016	65, 2017	70, 2018	71, 2020		
S	36, 2002	51, 2009	55, 2012	56, 2012	57, 2013	58, 2013	60, 2014	63, 2016	65, 2017	69, 2017										
T	38, 2002	43, 2005	45, 2007	56, 2012	58, 2013	61, 2015														

Source: author's own elaboration

Fair value measurement, impairment, valuation, uniformity, and account segregation are cross-cutting topics that emerged in the initial stage of the literature and continue to be relevant in contemporary debates. The issue of company valuation, where the strategy involved selling the company at a higher price to subsequently increase fees,

was prohibited under regulations (Jarrell, 1979). However, topics such as the comparability of financial statements and the impact of inflation remain inadequately addressed in the UCA literature (Vass, 1993; Whittington, 1994).

The most debated topics in the literature, particularly following the 1990s, include the impact of political costs on accounting measurement and the potential influence on fees, which implies a transfer of wealth from consumers to shareholders. This discussion is directly connected to the necessity for specialized accounting practices for utilities companies that aim to reduce information asymmetry between the company and the regulator. It is also related to the accounting changes resulting from privatization. Consequently, there has been an increasing demand for accounting disclosures that encompass not only financial information but also details on quality, performance, environmental impact, and costs, which can illuminate the managerial and social outcomes of utilities companies.

By the late 1990s, the literature recognized the need for a cost and budget structure capable of providing regulators with improved information to reduce information asymmetry, enhance comparability among companies, and establish equitable rates. Additionally, discussions emerged regarding the impact of International Accounting Standards (IAS) and International Financial Reporting Standards (IFRS) on UCA, paving the way for debates on accounting and measurement of concession contracts.

This discourse highlighted the need to disseminate more information tailored to the specific requirements of utilities companies' management and regulation, as well as for other users, such as citizens, which may not align with the standardization processes under IFRS.

4.4 UCA definitions in academic literature

The accounting requirements and criteria mandated by regulatory and supervisory entities for utilities companies (UCs) are referred to in the literature as “public service accounting,” “accounting for regulated industries,” and frequently as “regulatory accounting.” The first industry to be regulated in the United States was the rail transport service, which began in 1844. In 1876, Massachusetts took the initial steps toward the uniformity of utilities accounting records, as ordered by the Board of Railway Commissioners (Price, 1965).

UCA initially operated under the same accounting regulations that applied to railway companies. In 1889, the commission was renamed the National Association of Railroad and Utility Commissioners (NARUC). Beginning in 1905, following the establishment of regulatory committees for utilities companies, the necessity for a specific accounting system for this industry gained prominence. This was further reinforced when the U.S. Supreme Court granted utilities companies the right to establish their own accounting systems in 1912 (Preston, 2008).

Table 5. Definitions of UCs' accounting

Author	Name	Definition
Bauer, 1930	CSP	The object of public utility regulation is largely rate control. The importance of accounting, including impairment provisions, depends on the pricing policies, how and based on what rates these are set (p.112).
Jarrell, 1979	CSP	Regulatory commissions have sole authority over the accounting practices of utilities (...) These regulatory demands have influenced every phase of public utility accounting and has had broad ramifications for general accounting practices (p.96,105).
Vass, 1992	CIR	The first step towards an increased regulatory intervention that demands more information from the regulated company is the increased importance of modelling the company's business as established by the regulator (p.304, 310).
Loudder et al., 1996	CR	Specialized industry accounting practices evolved to reflect the effect of the utility regulator's actions on the firm's financial position (p.357).
Arnold, Hartung, 2000	CR	The accounting methods adopted by public service commissions have direct cash flow consequences for utility investors since regulatory accounting is the basis for determining the rates electric utilities can charge customers. (p.164).
Galetovic, Sanhueza, 2002	CR	We propose moving towards a regulatory accounting system capable of being used as an input in fixing each fee (p.111).
Ruiz, 2006	CR	Regulatory accounting is among the fundamental tools regulators require to perform their duties properly (p. 64).
Preston, Vesey, 2008	CSP	As a result of the numerous court rulings, a new form of accounting was constructed in the US between 1907 and 1944. This came to be called public utility accounting (p. 428).
Pompilio, 2009	CR	The importance of regulatory accounting lies in the fact that it is the cornerstone for effective regulation. General Accounting-provided information is insufficient for regulatory use (p.3).
Fernández et al., 2009	CR	Regulatory accounting integrates information from the accounting system with information from the non-accounting system (p.22).
Amador, 2011	CR	The core purpose of regulatory accounting is to reduce the regulator's informative advantage over the regulated entity (p.50).
Hantke, Jouravlev, 2011	CR	Regulatory accounting sets rules for integrating and connecting accounting information with non-accounting information (p.31).
Brugni et al., 2012	CR	The main feature underlying the creation of regulatory accounting is concessionaires' inability to record the so-called regulatory assets and liabilities (p.113).
Suzart et al., 2013	CR	The corporate accounting model further differed from the regulatory accounting model due to the adoption of IFRIC 12 (p.162).
Carvalho et al., 2014	CR	Regulatory Accounting emerged to equalise the conflict of interest between agents (p.21).
Damacena et al., 2017	CR	In exceptional conflict cases (...) MCSE rulings always prevail (Aneel, 2015); in short, regulatory accounting prevails (p.3).

CSP: Public utilities Accounting; CR: Regulatory Accounting; CIR: Regulated Industries Accounting

Source: author's own elaboration

Regulatory accounting emerges as a unique form of accounting that differs from capital markets financial accounting, requiring a more substantial amount of specific data. While International Financial Reporting Standards (IFRS) are designed to meet the reporting requirements of investors, capital providers, and creditors, regulatory accounting encompasses the needs of other users, who should be regarded as the primary users of this information.

Moreover, it is essential to recognize that users such as the government not only utilize financial reports but also need to establish accounting criteria and assess financial results. These elements are vital for regulating, monitoring, overseeing, and comparing the public policies developed by regulatory commissions and supervisory entities.

Therefore, it is important to consider the accounting information needs of all stakeholders involved in utilities companies (UCs). This inclusive approach could serve as a strategy to reduce information asymmetry and mitigate moral hazard in the establishment, inspection, and monitoring processes, as well as in the government's role as regulator and supervisor, alongside regulated companies, and other involved parties.

4.5 Characterization of UCA Users

Utilities companies (UCs) are generally regulated due to their monopoly or oligopoly status. Consequently, the state typically assumes the roles of regulator, supervisor, and assessor through regulatory committees, control bodies, and, in some cases, through the courts as a last resort to mediate conflicts between users.

The state acts as an intermediary, seeking fairness and justice among the parties involved. As such, while companies may exert pressure on the state to increase fees and reduce oversight, consumer communities can also influence the process, advocating for lower fees and improved quality of service.

The literature on UCA addresses the interests of various parties; some focus on the financial needs of companies and their shareholders, while others examine the relationships between regulators, regulated entities, and consumers. Furthermore, certain works have included additional stakeholders relevant to conflict mediation within these relationships.

This study characterizes the users identified in the UCA literature using a two-by-two matrix, which facilitates user classification into four categories. The horizontal axis represents the relationship between companies and consumers, while the vertical axis delineates the influence of institutional entities versus social entities. Users are classified based on their closest affiliation. The first category encompasses users under the institutional-enterprise influence (IE), the second includes those under institutional-consumer influence (CI), the third involves consumer-social influence (CS), and the fourth pertains to enterprise-social influence (ES) (see Table 6). This characterization simplifies the accounting of users and clarifies the interests that each article has directed towards UCA (see Table 7).

Table 6. Characterization of UCA-interested users

Relationship Company	Institutional influence		Relationship consumers
	IE: Shareholders, Investors, Investment Analysts, Administrators, Auditors.	IC: Government, regulatory committees, courts, supervisory body, accounting regulators, politicians. CS: Community, consumer representatives, consumers, media, auditors, the electorate, opposition politicians, researchers, environmental activists.	
	Social Influence		

Source: authors' own elaboration

4.6 IE User Category

The requirements and needs of investors and creditors indicate their interest in obtaining useful information to assess future cash flows. Consequently, information regarding risks, performance, and financial position is of paramount importance.

The UCA literature pertaining to the IE category also encompasses other stakeholders, such as managers, who typically select accounting policies for recognition and measurement based on strategies that benefit shareholders (McGee, 2007). Additionally, managers often engage auditors, financial analysts, and other experts to support their decision-making processes (Loudder, Khurana, & Boatsman, 1996).

4.7 IC User Category

The state should exercise control through regulatory committees and government inspection and oversight entities, acting as mediators between utilities companies (UCs) and consumers. This involves establishing methodologies for setting fees and ensuring quality in service provision, which requires the identification of the information needed from UCs and the provision of guidelines for the preparation of such information. The regulator establishes accounting policies related to the recognition, measurement, and disclosure of the information that the regulated entity must submit, based on the necessity for uniformity in accounts, as well as the recognition and measurement of assets, expenses, and costs. This also includes the segregation of assets, revenues, and expenses associated with regulated and non-regulated activities, as well as accounting for contracts and intangibles, among other considerations (Yamamoto, 1993).

However, accounting standardization institutions are currently promoting the standardization of the accounting policies utilized by UC industry regulators, implicitly adopting the needs of capital market stakeholders. This situation has led to varying debates and conflicts, depending on the positions of domestic regulatory bodies and the influence exerted by different stakeholders promoting accounting standardization (Vianna Brugni et al., 2012).

Politicians are critical actors in enacting laws and regulations that determine the independence or dependence of regulatory committees from executive and government administrative decisions, which may be influenced by companies or voters (Helden & Reichard, 2019). Politicians require information and statistics provided by both companies and regulatory committees to exercise political control. Moreover, accounting information can be instrumental in (de)legitimizing political positions and decisions (Giacomini et al., 2016, p. 484).

When disputes arise between consumers and UCs that are not diligently addressed by regulatory or supervisory entities, the parties may escalate their complaints to the courts, where judges are responsible for resolving the disputes (Mason, 1936).

4.8 CS User Category

Consumers are the users most adversely affected by fees, quality, and customer service. Individually, they exert minimal influence on UCA policy-making and generally lack the knowledge to fully understand accounting disclosures. Nevertheless, the media plays a crucial role in reporting on UCA actions, significantly impacting public opinion.

It has facilitated consumer mobilization and influenced voters' decisions to demand better performance from utilities companies (UCs) and adjustments to government regulations (Beekes, 2003; Cooper, 1998).

In some countries, consumer representatives are appointed to advocate for consumers before regulatory committees, mediating to ensure that state regulations and oversight benefit those they represent (Scott, 1947).

Shaoul (1997) argues that academic researchers play a vital role in disclosing and exposing the social situations of organizations; however, in the context of UCA, this type of user has primarily focused on analyzing problems and technical issues, without critically questioning accounting practices and business conduct. Shaoul contends that it is feasible to utilize the information disclosed by companies in their financial statements to report on inappropriate events and unfair or socially irresponsible outcomes.

Furthermore, other users, such as auditors and environmental and social activists, engage in critical work concerning corporations' irresponsible actions. These users seek accounting information that enables them to demonstrate misleading actions or omissions in disclosures (Osorio-Agudelo et al., 2020).

4.9 EN category users

Workers, trade unions, and labor leaders of utilities companies (UCs) are also users of the accounting information produced by these organizations, as they negotiate rights and obligations with management (Scott, 1947). Companies are not only financially accountable to their shareholders; they also bear a social responsibility and obligations to their workers and society at large. UCA can help define and illustrate the allocation of benefits among the stakeholders involved in the productive and social developments of UCs, given that these services are socially relevant. Thus, the varying benefits derived from UCs’ activities should be allocated equitably.

When preparing accounting information that reflects the situation and performance of the UCs, accountants and public auditors should consider not only the interests of shareholders and managers but also those of other third parties involved in these relationships. Consequently, accountants could develop accounting information that is beneficial to a broader range of users (Jarrell, 1975).

Table 7. Category of UCA users identified per article interest

Relación con la empresa	Influencia Institucional		Relación con los consumidores
	1,8,14,15,16,17,18, 19,20,22,23,26,27,28,29, 30,31,33,35,38,39,40,41, 45,46,47,48, 49,50,51,53, 55,57,58,61,65,67,69,70, 71,72	1,2,3,4,5,6,8,9,10,11,12,14,15,16, 17, 19,20,21,22,23,25,26,27,28,29, 30,3 1,33,35,36,37,38,39,40,41,44, 47, 48, 49,50,51,53,54,55,57, 58,59,60,63,64, 65,66,67,68,69,70,71	
	1,7,15,16,34,57,58,72	1,8, 14,15,19,20,22,23,29,30,31,32, 33,35,36,38,40,41,46,51,54,57,58, 59,67,69,71	
Influencia Social			

The systematic literature review identified a greater interest in information conflicts within the institutional-consumer (IC) category, present in approximately 80% of the documents, compared to about 56% for the institutional-enterprise (IE) category. The consumer-social (CS) category accounted for 38%, while the enterprise-social (ES) category comprised only 10% (see Table 7). The results of our literature review are consistent with those obtained by Shaoul (1997), who argued that academic research on UCA has primarily concentrated on technical and institutional problems rather than on critical and social issues.

to exercise their right to information and participate in the oversight of the services they receive.

The characterization of accounting information users in the context of utilities companies is closely linked to the findings of the bibliometric analysis, which reveals a diversity of actors with specific informational needs. This finding aligns with theoretical frameworks on information asymmetry, suggesting that the lack of adequate data can create imbalances in the relationships between different users and companies, particularly in a monopolistic sector.

The reviewed literature indicates that while investors and regulators are the primary recipients of accounting information, citizens and other stakeholders also require transparent and accessible data

This underscores the necessity of developing an accounting approach that not only meets the demands of capital markets but also addresses the needs of underrepresented users, thereby contributing to mitigating the information asymmetry inherent in a monopolized sector. Consequently, it becomes evident that further research is needed to deepen the understanding of the relationship between regulatory accounting and diverse users, promoting a framework that ensures transparency and accountability in the management of utilities companies.

5. Discussion and conclusions

Utility Companies Accounting (UCA) is recognized as a specialized form of accounting that must meet the diverse needs of various users due to conflicts of interest arising from the industry's monopoly or oligopoly status, the necessity for fee regulation, and the significance of the services provided for social welfare. This situation contradicts the standardization process under International Financial Reporting Standards (IFRS), which promotes the homogenization of financial information across all industries and economic sectors, positioning investors and capital providers as the primary and prototypical users.

The literature on UCA has predominantly focused on technical aspects rather than addressing critical accounting issues or dimensions within the industry. This is evident in the results of this systematic literature review, which indicates that the research and work identified primarily address the information needs of UCs' shareholders and regulators, often neglecting the needs of consumers, workers, and other societal users.

The discussion surrounding users' information needs and the concept of UCA is particularly relevant in our current standardization environment, as it contributes to assessing whether IFRS-based information effectively addresses industry conflicts and mitigates information asymmetry and agency problems among the various stakeholders of UCs, or whether, conversely, IFRS-based information exacerbates accounting non-conformity and widens decoupling gaps.

The findings suggest that regulatory accounting must adapt to the specific characteristics of utility companies, considering the diverse range of information users, which includes not only investors but also citizens, government agencies, and regulatory bodies. This plurality of users underscores the need to develop an accounting framework that minimizes information asymmetry and addresses the specific demands of each group, contrasting with the prevailing trend toward standardization under IFRS.

Despite the crucial importance of the utility companies sector for the economy and the well-being of citizens, there exists a notable scarcity of research and academic publications dedicated to this specific area of regulatory accounting. This lack of attention in the scientific literature is concerning, given that public utilities are fundamental to the functioning of society and the economy, directly impacting citizens' quality of life and community sustainability.

The limited exploration of accounting topics in this sector not only hinders a comprehensive understanding of its dynamics and challenges but also underestimates the necessity of developing accounting frameworks that address the specific needs of information users. Therefore, it is imperative to encourage researchers to delve deeper into this field, promoting studies that address the complexities and specificities of utility companies, in order to contribute to better regulation, transparency, and accountability in a sector that is vital to economic and social development.

Conflict of interest

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