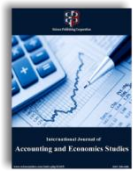
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Research paper



Web based financial disclosure in European context: European transparency directive analysis

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Abstract

This study aims to explain the relationship between firm specific characteristics and the corporate Web based disclosure level in European Union countries. European companies should apply the transparency directive requirements, which clarifies principal component of corporate Websites content. We analyze the Websites content of 197 listed groups on capital market of six European countries: Germany, Spain, French, Italy, Netherlands and UK.
Web disclosure level, endogenous variable, is measured by disclosure index. It includes four dimensions: content, timeliness, technology and user supports.
Our findings show that profitability, concentration ownership, information technology (IT) sector and Big 4 affect significantly Web disclosure index. We conclude that IT sector determining factor of Web financial disclosure in Europe.

Keywords: *Corporate Websites; European Directive; Information Disclosure; OLS Rank Transformation Regression; Regulatory Information*.

1. Introduction

Since 1990's years, listing companies on the world utilize the World Wide Web, as a new tool for the information dissemination. They communicate financial and non-financial information through their corporate Websites to shareholders and they practice the "Internet financial reporting (IFR)".
IFR refers to the announcement of financial reports and statements on the listed companies Web sites. Others financial and non-financial information can be diffusing on their sites. We designate the Web based disclosure (WBD) practices, (Prabowo & Angkoso, (2006)).
Basing to the XBRL protocol, information dissemination in a digital format pervade around the Word. Internet "is a unique information disclosure tool that encourages flexible forms of presentation and allows immediate, broad, and inexpensive communication to investors", (Kelton & Yang, (2008), p 63). Information presentation formats permit alternative to facility accessibility and understand information, which many insure reliability and transparency information and affect investment' decision, (Hodge and al. (2004)).
Scholars were interesting to analyze Websites based reporting. There describe and explicit the financial disclosure through Websites of listed firms in different countries, (Marston & Polei, (2004)). Explanatory studies examine the IFR determinants in several countries: there are been conducted in developed countries (Craven & Marston, 1999, Debreceny and al. 2002, Boubaker and al. 2012…) and in emerging countries, (Henchiri, 2011, Puspitaningum & Atmini, 2012…). There found that firm characteristics are the IFR determining factors.
Previously, financial disclosure at corporate Web is voluntary, unregulated disclosure practice. Any regulatory bodies require the possession of Website and the publication of financial statements at corporate site, (Prentice and al. 1999, Ettredge and al. 2001). At over time, online disclosure receives more attention by accounting bodies and markets regulators.
Some of them were presented a set of recommendations identifying the "best online financial disclosure" by listed firms, such as IASC, (1999), FASB, (2000). Others of financial authorities mandate the use of Websites as information diffusion tool and they order specific information, which should be incorporated on the corporate site (SEC, 2003, COB, 2007).
European Union (EU) was establishing a list of corporate information transparency norms, which reinforce more investors' confidence. 2004/109/CE European directive relating the harmonization of transparency standards requires regulated information publication by trading companies on regulated market. The article 17 of this directive authorizes the use of electronic mean, as a corporate information publication tool, a well site Web.
In this study, we analyze and compare the regulated information disclosure practice between listing companies in European developed countries. We examine the relationship between firm specific characteristics and Web disclosure level on European groups' websites.
This study contributes to IFR existing literature by investigating the difference of the extent of Web based regulated and voluntary information published between different companies.
It realizes by comparing six countries from two different accounting models. There are Anglo-Saxon and Continental models.
This paper is structured as follow: the first section provides the concise overview of the Web reporting' previous literature. The

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second section details the theoretical foundation and hypotheses. The firth section describes the research methodology and the final section discusses empirical results and multiple regression analysis.

2. Web based disclosure: literature review

Marston & Polei, (2004) classified the Web based disclosure studies to two categories: descriptive and exploratory studies.

2.1. Descriptive studies

Previous descriptive studies are exploratory, which identified and described Internet based financial reporting practice (IFR) of listed companies. These were interested into the content and format of Internet financial reporting.
Many accounting standard setters published studies, which specifying the nature of Web based business and financial reporting (ISAC, 1999, CICCA, 1999, FASB, 2000).
Accounting researchers were carried again a descriptive studies of IFR practices in individual countries, (Louwers and al., 1996, Petravick & Gillet 1996, Gray & Debreceny 1997, Brennan & Hourigan 1998, Gowthorpe & Amat 1999…) and others studies compared those practices between two or more countries, (Lymer & Tallberg 1997, Deller and al. 1999, Allam & Lymer 2003…).
Recently, Abdalmuttaleb & Al-Sartawi, (2016) qualified the level of online financial disclosure usage in the Gulf Cooperation Council, (GCC) listed companies. They showed that the majority of the GCC companies disclosed a good level of content and format presentation dimension information through their Web site. They indicate that the content dimension differs from one country to other and from industry type to other and that the level of presentation dimension was better in Oman than in Bahrain and on banking companies than insurance and investment companies.

2.2. Explanatory studies

Researchers were experienced an empirical investigation attempt to determine explanatory factors of Web based financial disclosure. They examined the relationship between company and country specific characteristics and Internet based financial disclosure of listed firms. Those studies were realized into a signal country and other concerned the comparison between two or more countries. Table 1 presents some of IFR exploratory studies.

Table 1: IFR Exploratory Studies

Authors	Sample	Object	IFR Dimension	Significant independent variables
Previous studies				
Pircheegger & Wagenhofer, (1999)	Austrian and German companies	Analyze the use of the Internet on the financial information presentation	Content, Timeliness, Technology and User support and total score	Firm size and percentage of free
Debreceny and al. (2002)	660 large companies in 22 countries	Identify a theoretical framework and empirical of the determinants of IFR	IFR content (IFR-C) IFR presentation (IFR-P)	Firm size, foreign and US listings and firm technology
Marston & Polei, (2004)	German DAX 100 companies	Test the association between firm specific factors and online disclosure practices	Investor related information, social and environmental disclosure, contact details, technological feature and convenience and usability	Foreign listing status and free float
Xiao, Hang and Chow, (2004)	300 largest Chinese companies	Analyze the factors voluntary adoption of Internet based financial reporting	Content score, presentation score, CSRC required information, non CSRC required information, Presentation of English Web sites, total score	Ownership structure, board independence, auditor type and industry.
Kelton &Yang, (2008)	284 firms traded in the NASDAQ	Analyze the Relationship between governance mechanisms and IFR level	Content score, presentation format score, corporate governance disclosure and total score	Shareholder rights, block ownership, Board independence, audit committee financial expertise and diligence
Henchiri, (2011)	Top 91 companies listed in the Moroccan and Tunisian stock exchanges	Compare and identify the determinants on the Web site	General information, non financial information, financial information, site design and total score	Firm size
Recent studies				
Bekiaris and al. (2014)	Traded Greek and Cypriot construction companies	Investigate the association of firm characteristics with the level of IFR	Content, Timeliness, technology and user support and total scores	Profitability, leverage, firm age and ownership dispersion
Hassan, (2015)	37 non-financial firms listed on Abu Dhabi and Dubai financial markets	Examines the effect of internal governance mechanisms of strategic information	Internet reporting of strategic information index	Audit committee quality, firm size, level of risk and firm complexity
AlMatrooshi and al. (2016)	48 companies listed in the Bahrain	Investigates the relationship between audit committee characteristics and IFR	Internet financial reporting Index	Any significant relationship between audit committee and IFR
Aboutera & Hussein, (2017)	133 listed Egyptian companies	Examine the determinants of IFR	Content on financial information, Other financial information, Presentation and user support	Company size, auditor type and company age

3. Theoretical background and research hypotheses

Researchers indicated that voluntary disclosure theories extended to explain Web based communication managerial motivations, (Debreceny and al. 2002, Xiao and al. 2004). Those theories were considered an IFR theoretical framework, which clarify the relationship between the firm specific characteristics and the level of Web based financial disclosure.

3.1. Web based disclosure theories

Agency and signal theories (Xiao and al.2004, Craven & Marston 1999), proprietary and political costs theories, (Alvarez and al, (2008)) and cost benefit analysis, (Oyelere and al. 2003) constitute the IFR theoretical framework.

Xiao and al. (2004) and Dolinsek and al. (2014) suggest that innovation diffusion theory can again explain the adoption of Internet financial disclosure.

3.1.1. Agency theory

Agency theory concerned the relationship between the principal and the agent, which arising the separation between the ownership and the control of a company. In this case, it result problems of interest conflicts and information asymmetry, (Cotter and al. (2011)).
Both of these parties seek to maximize their utility: managers seek personal interests and shareholders would protect them self against this opportunism behavior. However, managers will disclose more information on the annual report in order reduce agency costs, (Watson and al. (2002)).
The use of Internet, tool of financial communication, can solve agency problems. Investors can access easily and rapidly to financial and accounting information a low cost. This access can decrease asymmetry problems between managers and shareholders and reduce agency costs, (Ashbaugh and al.1999, Debreceny and al.2002).

3.1.2. Signal theory

Signal theory suggests that more profitable companies are more likely to communicate information, to signal a good new and distinguish them from other firm less profitable.
Managers are more motivated to disclose more private information to investors in order to reduce the information asymmetry and increase the value of the firm, (Alvarez and al., (2008)).

3.1.3. Proprietary cost theory

Proprietary cost theory suggests that the production and communication private information can hurt the competitive position of a firm. Verrecchia, (1983) and Prencipe, (2004) indicated that dissemination information to competitors will be a competitive disadvantage to a firm, generating "Proprietary costs".

3.1.4. Political cost theory

Firm can utilize voluntary disclosure, allowing the improvement their relationship with external stakeholders, (governments, suppliers, consumers….), (Watts & Zimmerman, (1978)). Firms, which high political visibility, will disclose more information in order to achieve social pressures (such as governments), reduce political costs (such as taxes) and obtain some advantages (taxing advantages), (Deegan, (1996)).

3.1.5. Cost benefit analysis

Voluntary disclosure decision can benefit firm advantages and support costs, (Gray & Roberts, 1992, Meek and al.1999). Cooke, (1989) suggests that the benefits must exceed the voluntary disclosure costs.
Against, the use of Internet such as medium of financial publication, favor more advantages to firm, investors and stakeholders, (Turel, (2010)).
Web site facilities the access and the reliability of information: information 'users can interpret information, advising in the decision making process, (Bonson & Escobar, (2006)).
Consequently, the Web ensures high quality financial information (such as transparency, relevance, reliability…) at a lower cost than paper support.
The electronic format of financial reporting allows to supports information disclosure costs (preparation, printing and distribution costs of quarterly and annual reports). But, it creates also news costs, which they are related to the costs of creation, update and the maintenance of Web sites, (Ashbaugh and al. (1999)).

3.1.6. Innovation diffusion theory

According to Rogers, (2003), innovation diffusion explains how a new innovations and ideas are accepted gradually and perceived as a useful adoption in a social system and at time sequence, (Al-Htaybat and al. (2013)).
In accordance to Rogers, the adoption of the Internet, such as a channel of accounting and financial information, is an innovation facilities and promotes the interpersonal interaction.
Communicating corporate information on the Web allows firm a new attractive and sophistical dialogue with larger number of shareholders and larger public, which strengthen the management decision process, (AbuGhazaleh and al. 2012, Dolinsek and al. 2014).

3.2. Hypotheses development

3.2.1. Firm size

The relationship between firm size and voluntary disclosure was frequently examined. Chow & Wong-Boren 1987, Cooke 1989, Botosan 1997, Ahmed & Courtis 1999, Owusu-Ansah 1998, Depoers 2000 and others found that this relationship is significant and positive.
They indicated that larger companies disclose more information on their annual report, in order to reduce the asymmetry information and agency and political costs, (Alvarez and al. (2008)).
In accordance to an innovation diffusion perspective, firm size is reviewed as a predictor of organizational innovativeness since that it is a surrogate measure of many dimensions such as total resources, personal resources and organizational structure…, (Rogers, (1995)).
Larger firms are more able to follow a new technological development and adopt mass media channel communication, as a mean of communication financial information, (Al-Htaybat and al. (2013).
Previous studies indicated that larger firms, with greater agency and political costs, are more likely to disclose more information on their Web site. They indicated a positive association between firm size and the Internet financial reporting, (Ashbaugh and al. 1999, Debreceny and al. 2002, Marston & Polei, 2004, Bollen and al. 2006, AbuGhazaleh and al. 2012, Omran & Ramdhony, 2016…). It is hypothesized that:
H1: Firm size affects positively the level of Web based financial information disclosure.

3.2.2. Profitability

According to Craven & Marston, (1999), the use of Internet constitutes as better signal for the firm performance. That also, more profitable companies are more susceptible to create their Web sites and communication their financial and strategic information electronically, distinguishing than the less profitable companies.
Managers of profitable companies want to increase the level of financial information on the Web site, in order to attract the confidence of investors and the continuity of firm activity, (Oyelere and al. (2003)).
Empirical studies suggest that firm profitability affect significantly and positively the level of Web based financial disclosure. But, their empirical presents mixed evidences.
Ashbaugh and al. (1999), Ettredge and al. (2002), Oyelere and al. (2003), Marston & Polei, (2004), Xiao and al. (2004), Bollen and al. (2006) and Andrikopoulos and al. (2007) showed that the profitability is not significantly related to the financial information on line.
Boubaker and al. (2012) confirmed that profitability is significantly and positively associated to the level of Internet financial reporting in French. It is hypothesized that:
H2: Profitability affects positively the level of Web based financial information disclosure.

3.2.3. Liquidity

According to signal theory, a high level of firm liquidity constitutes a better signal of financial position: firms will show their ability to meet their current engagements. Also, those firms disclose more information, signaling their performance to shareholders, (Cooke, (1989)).
Previous studies indicated that highly liquid firms are more likely disclose corporate information on their annual report, (Alsaeed, (2005), Aljifri and al. (2014)).
Oyelere and al., (2003) reported that liquidity is significantly and positively related to Internet financial reporting in New Zeeland. This result is indicated by Hossain and al. (2012), Puspitaningrum & Atmini, (2012). It is hypothesized that:
H3: Firm liquidity affects positively the level of Web based financial information disclosure.

3.2.4. Leverage

Jensen & Meckling, (1976) showed that creditors would exercise more control with managers, wanting to assume firm obligations and protect their interests. Consequently, many interests' conflicts will rise between both parties and firms will support more agency costs, (particularly, monitoring costs).
Companies with a high leverage ratio would disclose more information on the Web and update information in order to resolve monitoring problems and reduce agency costs, (Debreceny and al. (2002), Oyelere and al. (2003)).
Authors supported a positive association between leverage and the level of financial reporting on the Web site. But, their empirical results are inconsistent. Some studies found no significant relationship (Larra'n & Giner, (2002), Oyelere and al. (2003), Turrent & Ariza, (2012), Aboutera & Hussein, (2017)).
Bekiaris and al., (2014) showed that leverage is significantly associated with Internet based financial reporting quality of construction companies listed in Greek and Cypriot stock exchange. It is hypothesized that:
H4: Leverage affects positively the level of Web based financial information disclosure.

3.2.5. Ownership concentration

In the diffusion ownership context, the potential of agency problems between shareholders and managers are greater. A situation of asymmetry information between contracting parties, will be generate, (Prencipe, (2004)). Voluntary disclosure is considering as a mean to resolve the divergence of interest and agency problems. Companies, with a diffused ownership, disclose more information on their annual report, which can reduce agency costs, (Paturel and al., (2006)).
Inversely, high concentrated ownership firm discriminate by the dominance of major shareholders, who influence most the equity owners, (Hannifa & Cooke, (2002)). Firms are appropriate by a less control and less conflict interests. Also, managers will disclose less information on the annual report, (Arcay & Vazquez, (2005)).
Abdelsalam & Street, (2007), Turrent & Ariza, (2012), Momany and al. (2016) found that the relationship between concentrated ownership and Internet financial reporting is significantly and negatively. It is hypothesized that:
H5: Ownership concentration affects negatively the level of Web based financial information disclosure.

3.2.6. Sector type

According to innovation diffusion perspective, information technology (IT) companies are more likely to adopt a mass media, as a channel of information communication because they have more expertise on the technological development then others companies, (Xiao and al. (2004)).
They have more human and technical resources, available to adopt innovations such as Internet. They have more susceptible to appropriate a Web site, as a financial reporting channel and to disclose more information on line than others companies.
Boubaker and al. (2012) confirmed that information technology (IT) companies listed in the French stock exchange disclose more information on the Web site then companies of others industries. It is hypothesized that:
H6: Information technology (IT) companies disclose more financial information on their Web sites then others companies.

4. Methodology

In this section, we detail the methodology procedure with we specify the sample, measurement of variables and regression model.

4.1. Sample

The population of this study comprises of listed companies on a regulated market of European countries. Those companies should apply the 2004/109/CE directive requirements, which concern the harmonization of provision of national (European country) law on periodic and ongoing information requirements.
We select six developed European countries, with high market capitalization stock exchanges: Germany, Spain, French, the Netherlands and the United Kingdom, (UK). There are from two different accounting models: Anglo-Saxon and Continental models.
Our initial sample is composed by 271 groups, including into principal market stock index.

Table 2: Sample Composition

N°	Country	Stock exchange	Financial index	Number of Companies
01	French	Paris stock exchange	CAC 40	40
02	Italy	Milan stock exchange	FTSE MIB	40
03	Germany	Frankfurt stock exchange	DAX	30
04	Netherlands	Amsterdam stock exchanges	AEX INDICE	25
05	Spain	Madrid stock exchange	IBEX	35
06	UK	London stock exchange	FTSE 100	101
Final sample				271

This sample was reduced then to financial sector companies as there have specific and different disclosure requirements, (Gul & Leung 2004, Huafang & Jianguo 2007).
We eliminated firms did not have a corporate Web site (Ezat & El-Masry, (2008)) and downloadable site, ((Lybeart, (2002)). Others companies are traded in two and more stock exchange, we consider the quotation on the domicile-country and we excluded again 8 groups, as there haven't a data. The final sample included 197 groups in the 2011-2012 fiscal year.

Table 3: Final Sample Description

Country	No Financial companies	Web sites inaccessibility	Dual quotation	Lack data	Number of Companies
French	36	0	03	0	33 companies
Italy	27	01	01	0	25 companies
Germany	25	0	0	0	25 companies
Netherlands	22	0	03	0	19 companies
Spain	27	0	03	0	24 companies
UK	84	02	03	08	71 companies
Total	221	03	13	08	197 companies

4.2. Endogenous variable: Web based disclosure

Previous studies were developed a disclosure scores, as a proxy measuring the quality (Lang & Lundholm, (1993)) and the quantity of financial information on the annual reports, (Cooke, (1989), Botosan, (1997)). Authors were employed two scoring approach: unweighted and weighted methods.

Researchers claimed that weighted scores are more subjective, which focus on a particular user group, (Cooke, (1989)) and they prefer to employ unweighted method. They considered that unweighted, dichotomous scoring reduces the subjectivity and accords equal important to an each disclosure item, (Gray and al., (1992), Hossain and al., (1995)).

The applicability of scoring approach is a dichotomous: one is assigned if the item is disclosed by each company and zero otherwise presents a problem. Company may be penalized if an item was not relevant. However, Cooke, (1989) proposed the adjustment of non applicable items and the use of index disclosure, which check pertinent items to the business of a company.

Basic on this literature, authors were developed an index, measuring the extent of financial information disclosed on the Web sites of listed firms.

The first attempt of development of IFR index was done by Pirchegger & Wagenhofer, (1999).They identified four IFR dimension: content, timeliness, technology and user support. The idea was shared by others authors (Lybaert, (2000), Davey & Homkajohn, (2004), Chan & Wickramasinghe, (2006), Pervan, (2006), Celik and al. (2006)). In other way, FASB, (2000) proposed that IFR is composed in two dimensions: content and format presentation. This classification was been used by many researchers (Debreceny and al. (2004), Xiao and al. (2004) and Kelton & Yang, (2008)…).

Marston & Polei, (2004) consider that Pirchegger & Wagenhofer' instrument is a very comprehensive checklist for the evaluation of Web sites.

In this study, we calculate Web based disclosure index, evaluating the extent of financial information published on the European companies' Web sites. This index is defined from Pirchegger & Wagenhofer, (1999) criteria. They are content, timeliness, technology and user support.

We elaborate a checklist instrument, included 133 information items (table 4):

- Content: Web sites content includes company information and data. It integrated financial information, shareholders' information, social responsibility and business information, (Davey & Homkajohn, (2004)).

European companies should complete European directive requirements, concerning the financial transparence. According to the 2004/109/CE directive, companies traded on a European regulated market should publish their regulatory information through papers and electronic mean, such as a corporate Web site. Regulatory information includes periodic information, ongoing information and others required information addressed to holders on a regulated markets. However, these companies announce others additional information, which exceeded the transparency directive requirements. There were considered voluntary information.

Web Content composes in regulatory and voluntary information.

- Timeliness: Web site offers to companies the possibility of rapid and updating information in real time. The rapidity helps users to navigate on the Web and make efficient decisions. It includes for example press releases, forward looking statements…, (Davey & Homkajohn, (2004)).
- Technology: Pirchegger & Wagenhofer, (1999) define this technology as "the extent to which the companies under investigation make use of some of the more advanced features". Technology enhance the quality of the financial reporting and facilitate communication though corporate sites. Technology items incorporate moving pictures, graphics, and use of multimedia technologies….
- User support: It measures the design and layout of the Web sites, such as the search and navigation tools and number of clicks…

We complete voluntary disclosure, timeliness, technology and user support items according to the checklists instruments developed by previous studies, which deals the Web based financial disclosure in the European countries.

Total Web disclosure index (TWDI) was calculated as follows:

$$\text{TWDI} = \frac{\text{total Score obtained by firm}}{\text{Number total of items}} \quad (1)$$

Table 4: Web Based Financial Disclosure Dimensions

Items composition
Dimension 1:Websites Content
I- Regulated Information.
1- Periodic Information.
A- Annual Information.
1- Annual financial report.
2- Annual balance sheet of the parent company.
3- Annual of comprehensive income of the parent company.
4- Annual statement of cash flow of the parent company.
5- Notes to the annual company financial statements.
6- Annual management report of the parent company.
7- Annual auditor report certified the company annual statements.
8- Annual statements of persons responsible with the company
9- Consolidated annual balance sheet.
10- Consolidated annual comprehensive income.
11- Consolidated annual cash flow.
12- Notes to the consolidated annual financial statements.
13- Annual auditor report certified consolidated annual statements.
14- Annual consolidated management report.
15- Information concerning the corporate remuneration policies.

16- Compensation of administration (or supervisory) body president.
17- Compensation of other administration (or supervisory) body members.
18- CEO compensation.
19- Other management members' compensation.
20- "Stock-Options" compensation.
21- Other remuneration formats (benefits in kind).
22- Presentation of "Annual information" in English language.
B- Interim Information.
23- Interim financial report.
24- Interim balance sheet of the parent company.
25- Interim comprehensive income of the parent company.
26- Interim statement of cash flow of the parent company.
27- Notes to the interim company financial statements.
28- Interim management report of the parent company.
29- Annual auditor report certified the company interim statements.
30- Interim statements of persons responsible with the company.
31- Consolidated interim balance sheet.
32- Consolidated interim comprehensive income.
33- Consolidated interim cash flow.
34- Notes to the consolidated interim financial statements.
35- Interim consolidated management report.
36- Annual auditor report certified the consolidated annual statements.
37- Condensed profit and loss account.
38- Interim management statements.
39- Quarterly financial reports.
40- Presentation of "Interim Information" in English language.
2- Ongoing information.
A- Information about major holdings.
41- Information concerning the notification of the proportion of firm voting rights.
42- Information concerning the corporate share acquisition.
43- Information concerning the corporate share disposal.
44- Information concerning the change the rights attaching to the various classes of share issued by the firm.
45- Information concerning the new loan issues (in particular guarantee or security).
46- Presentation of "Major Holdings Information" in English Language.
B- Information requirement for issuers whose shares are admitted to trading on a regulated market.
47- Information concerning the agenda of shareholders meeting.
48- Information concerning the total number of share.
49- Information concerning the total number of voting rights.
50- Proxy form authorizing the vote to the meeting.
51- Notice concerning the meeting.
52- Circulars concerning the allocation and payment of dividends.
53- Circulars concerning the issue of new shares.
54- Presentation "information requirements" in English language.
3- Presence of filing and storage system.
55- Existence of filing and storage system.
56- Continuous financial data storage.
II. Voluntary information.
1- Financial information.
A- Investor relations.
57- Presence of "investor relations" sector on the Web page.
58- Analysts forecast lists.
59- Post addresses, reserved to investor relation.
60- Telephone number, reserved to investor relation.
61- E-mail addresses, reserved to investor relation.
62- Link to stock data on exchanges market Website.
B- Other financial information.
63- Financial ratios.
64- Key indicators.
65- Share price performance in relation to stock market performance.
2- Non- financial information.
A- General Information.
66- Firm Historic.
67- Chairman's message.
68- Presentation of company' activities.
69- Status.
70- Organizational chart.
B- Corporate governance.
71- Presentation of corporate governance section.
72- Internal control and corporate governance reports.
73- Supervisory board composition.
74- Supervisory board functioning.
75- Independence of board members.
76- Qualification of board members.
77- Experience of board members.
78- Information about board committee.
79- Information about management board members.
80- Internal and external auditors' honoraries.
81- Corporate governance code.
82- Ethics code.
83- Articles of association.

84- Information about risk.
C- Environmental and social responsibility information.
85- Existence of environmental and social responsibility information section on Web sites.
86- Environmental responsibility reports.
87- Social responsibility reports.
88- Sustainable development.
89- Information about social responsibility.
90- Information about human resources.
91- Information about innovation/technology.
92- Certificate of good environmental behavior ISO 14001.
93- Certificate of high quality ISO 9001.
94- Information about others certificate.
D- Segmental information.
95- Company products/services.
96- Products/services perspectives.
97- New products perspectives.
98- Total turnovers in current year.
99- Segmental information by line business.
100- Segmental information by region.
101- Concurrence.
102- Turnovers prevision.
103- E-commerce.
104- Publicity.
Dimension2: Website Timeliness.
105- Date of last update of Website.
106- Current press releases.
107- News.
108- Current share price.
109- Financial calendar.
110- Financial calendar update.
111- Newsletter.
112- E-mail Alerts.
113- Rapid access to "investor relation" section.
Dimension3: Website technology.
114- Financial reports in processable format (PDF, HTML, Excel….).
115- Financial data in processable format (PDF, HTML, Excel….).
116- Hyperlinks inside the annual report.
117- Hyperlinks from the annual report to others Websites section.
118- Hyperlinks related financial data.
119- Graphics.
120- Audio/video file.
121- Call conference.
122- Data in XBRL format.
Dimension 4: Website user support.
123- Sitemap.
124- Loading time of the Web site b 10 seconds.
125- Frequently Asked Questions (FAQ).
126- Help site.
127- Internal search engine.
128- Pull-down menu.
129- Click-over menu.
130- Next- previous buttons to navigate sequentially.
131- One click to get to investor relation section.
132- Mailing list.
133- Contact to "Web master".

4.3. Exogenous and control variables

Following to previous studies, we identified exogenous variables, which there are related to firm specific characteristics:

- Firm size (TA. ENT): this variable is measure by the natural logarithm of the total assets, using by several studies such as Ashbaugh and al. (1999), Almilia, (2009).
- Profitability (ROE): measured by the return on equity (ROE). This measurement was also used by Marston & Polei, (2004), Kelton & Yang, (2008).
- Liquidity (LIQUI): is measured by ratio of the current assets on the current liabilities, (Hossain and al. (2012)).
- Leverage (LEVR): correspond to the ratio of total debt on the total assets, (Turrent & Ariza, (2012))
- Concentration ownership (CON.OWN): is measured by the percentage of stock held by principal shareholders, (Abdelsalam & Street 2007, Abdelsalam and al. 2007)
- Information technological sector (IT.SEC): is measured by a dummy variable, noted 1 if the group operated on the Information technological sector (Xiao and al. 2004, Boubaker and al. 2012).

Previous studies showed that others organizational factors can explain the IFR practices, such as firm age and auditor type:

- Firm age (Age): Gandia, (2008) considers that older firms are likely to adopt voluntary disclosure strategic, lower costs. There can support processing and disseminating disclosure costs than younger firms. There are more likely to disclose more voluntary information on their Web site, (Hossain and al. 2012, Pozniak, 2013). Age firm is measured by the natural logarithm of firm activity' number years, (Momany& Pillai 2013, Pozniak 2013).
- Auditor type (BIG 4): Xiao and al. (2004) argue that international auditor (Big4) as change agent can facility the innovation 'diffusion such as financial reporting on line. They can encourage firms to utilize a Web site as a channel of financial reporting and disclose more information on their Web, (Bonson & Escobar, (2006)). Auditor type is measured by binary variable 1 if the group was audited by Big 4, o if not, (Momany & Pillai, (2013)).

4.5. Econometrical model

The following linear regression model to examine the association between firm specific characteristics and Web based financial disclosure.

$$WSDI = \beta_0 + \beta_1 FIR.SIZE + \beta_2 ROE + \beta_3 LIQU + \beta_4 LEVR + \beta_5 CON.OWN + \beta_6 IT.SEC + \beta_7 AGE + \beta_8 BIG\ 4 + \varepsilon \quad (2)$$

Table n°4 describes the identification and the measurement of endogenous and exogenous variable in this study:

Table 5: variable Measurement

Abbreviated Variables	Definition variables	Measurement variables	Data sources
Endogenous variable			
WSCI	Web sites content index	Content score obtained by firm/N	
WSTMI	Web sites timeliness index	timeliness score obtained by firm/N	
WSDTEI	Web sites technology index	technology score obtained by firm/N	
WSDSS	Web sites user support index	User support score obtained by firm/N	
TWSDI	Total Web sites disclosure index	Total score obtained by firm/N	Corporate Web sites
Exogenous variable			
TA.ENT	Firm size	Ln of total assets	
ROE	Profitability	return on equity	Annual report downloadable on Web site
LIQUI	Liquidity	current assets / current liabilities	
LEVR	Leverage	total debt / total assets	
CON.OWN	Concentration ownership	percentage of stock held by principal shareholders	Annual report downloadable on Web site www.boursorma.com www.europafinance.com
IT.SEC	Information technology sector	1 if the group operated on the Information technological sector	Annual report downloadable on Web site
Control variables			
AGE	Firm age	natural logarithm of numbers of firm 'activity years	
BIG 4	Auditor type	1 if the group was audited by Big 4, o if not	Annual report downloadable on Web site

5. Empirical findings

We discuss the empirical results in this section, which presents descriptive, multicollinearity and multivariate analysis

5.1. Descriptive analysis

Table 6 illustrates descriptive statistics of level of components' financial and business disclosure though corporate European Websites. In general, the level of Web disclosure varies to country from other.

European companies accord more importance to content and timeliness Websites than other components' site.

Table n° 7 provides descriptive statistics of exogenous continuous and binary variables.

In general, European groups are large corporation (firm size 'mean is more 17), which a high profitability, liquidity and leverage levels. Table 6 indicates that European groups operate on other sector than technology and major of them are audited by a BIG 4.

Table 6: Web Disclosure Practices

	French	Germany	Italy	Netherlands	Spain	UK
Web based disclosure index						
Minimum	0.609	0.578	0.473	0.571	0.601	0.556
Maximum	0.819	0.885	0.812	0.759	0.766	0.729
Mean	0.727	0.703	0.697	0.671	0.669	0.649
Sd. Deviation	0.046	0.064	0.064	0.055	0.041	0.044
Content index						
Minimum	0.451	0.466	0.368	0.443	0.458	0.406
Maximum	0.684	0.690	0.646	0.609	0.631	0.586
Mean	0.588	0.564	0.558	0.525	0.533	0.510
Sd. Deviation	0.044	0.053	0.052	0.051	0.042	0.029
Timeliness index						
Minimum	0.0301	0.037	0.030	0.030	0.030	0.022
Maximum	0.067	0.708	0.06	0.067	0.060	0.067
Mean	0.047	0.050	0.047	0.043	0.045	0.047
Sd. Deviation	0.008	0.008	0.008	0.011	0.009	0.008
Technology index						
Minimum	0.030	0.037	0.037	0.037	0.037	0.002
Maximum	0.060	0.061	0.060	0.060	0.052	0.060
Mean	0.043	0.044	0.047	0.052	0.044	0.042
Sd. Deviation	0.006	0.007	0.006	0.006	0.005	0.006
User support index						
Minimum	0.030	0.022	0.022	0.030	0.030	0.037
Maximum	0.075	0.067	0.067	0.060	0.060	0.067
Mean	0.048	0.044	0.004	0.049	0.046	0.049
Sd. Deviation	0.009	0.008	0.071	0.008	0.008	0.007

Table 7: Descriptive Statistics of Explanatory Variables

	French	Germany	Italy	Netherlands	Spain	UK
Continuous variables						
Firm size						
Minimum	8.930	8.624	7.513	8.409	10.008	7.812
Maximum	17.936	17.147	20.452	15.818	18.388	17.361
Mean	12.535	12.179	11.975	11.788	14.530	12.213
St. Deviation	2.967	2.804	3.319	2.861	2.413	2.890
Profitability						
Minimum	-0.155	-0.393	-0.212	-0.406	-0.704	-0.142
Maximum	1.640	0.272	0.755	0.627	0.991	2.132
Mean	0.144	0.119	0.141	0.087	0.115	0.245
St. Deviation	0.277	0.137	0.186	0.243	0.329	0.342
Liquidity						
Minimum	0.042	0.981	0.454	0.238	0.357	0.457
Maximum	10.193	4.038	4.151	2.795	2.424	8.039
Mean	1.428	1.751	1.539	1.261	1.201	1.532
St. Deviation	1.631	0.891	0.939	0.727	0.519	1.263
Leverage						
Minimum	0.427	0.334	0.275	0.288	0.239	0.0479
Maximum	0.886	0.881	0.878	0.890	0.956	0.945
Mean	0.641	0.615	0.639	0.650	0.668	0.574
St. Deviation	0.124	0.130	0.167	0.176	0.190	0.1838
Ownership						
Minimum	0.0500	0.09	0.0464	0.0536	0.05	0.009
Maximum	0.87	0.995	0.823	0.92	0.920	0.770
Mean	0.332	0.493	0.483	0.236	0.285	0.176
St. Deviation	0.243	0.268	0.190	0.266	0.233	0.1777
Age						
Minimum	1.333	2.079	0.693	0	0.693	1.0986
Maximum	4.736	4.955	4.700	4.615	3.295	4.828
Mean	3.082	3.616	2.510	2.678	2.458	3.141
St. Deviation	0.888	0.811	0.910	1.214	0.613	0.872
Binary variables						
Information industry						
Frequency of 1' s						
Frequency	2	4	4	16	4	3
Percent	6.1	16	16	84.2	16.7	4.2
Frequency of 0' s						
Frequency	31	21	21	3	20	68
Percent	93.9	84	84	15.8	83.3	95.8
Auditor quality						
Frequency of 1' s						
Frequency	23	25	25	19	22	70
Percent	69.7	100	100	100	91.7	98.6
Frequency of 0' s						
Frequency	10	0	0	0	2	1
Percent	30.3	0	0	0	8.3	1.4

5.2. Multicollinearity analysis

Multicollinearity in the explanatory variables has been diagnosed through analyses of correlation matrix, variable inflation factors (VIF) and tolerance.

We established a Pearson correlation matrix. It reveals that all correlation coefficients are below 0.8 (Kennedy, (1985), Bryman & Cramer, (1997)). All VIF values are below 10 and tolerance values are bigger 0.1. Also, there is no a Multicollinearity problem between exogenous variables.

5.3. Multivariate analysis

We specify the multiple regression approach appropriated to analyzing determining factors of Web disclosure and we interpret multiple regression results for our models. There are: Web content, timeliness, technology, user support and total Web disclosure index models.

5.3.1. Linear regression methods

An Ordinary Least Squares (OLS) regression, as a multivariate regression method was used to test the relationship between firm specific characteristics and financial disclosure. But, the application of the OLS method is inappropriate, relating to the construction of financial scores and index, continuous variables ranged between 0 and 1.

In the case of disclosure studies, the principal dilemma is that direction of the relation between continuous dependent and independent variables is not known through assumed no linear and monotonic. It result the violation of the regression assumptions, (Cooke 1998, Haniffa & Cooke 2002).

The suggestion to transform continuous and independent variables was performed.

This transformation might assume that the errors are normally distributed, (Cooke, (1998)).

Two regression techniques were applied by the prior and recent accounting studies (Abdelsalam and al. 2007, Aly and al. 2010, Abughazaleh and al. 2012…): full rank and normal scores transformations.

- Full rank transformation: this method consists to range variable with n observations from 0 to 1 and placed the observations from the smallest to largest. According to Lang & Lundholm, (1993), ranks scores were calculated using this formulation:

$$\text{Percentile rank} = \frac{\text{Rank}-1}{\text{Number of companies}-1}$$

- Normal scores transformation: This transformation is achieved by dividing the normal distribution into the number of observations plus one segment on the basis that each segment has equal probability, (van der Waerden, (1952, 1953).

Normality, Linearity and Homoscedasticity assumptions can be checked by normality plots such as Q-Q plots and histograms of dependant variables. Further, Normality test can be examined again by skewness, kurtosis and Kolmogorov- Smirnov test (or K-S Liliefors test).

We performed the Q-Q plots and histograms and K-S Liliefors test using SPSS 20. The result presumes that violation of normality, linearity and Homoscedasticity assumptions. Consequently, it will be legitimated to adopt a data transformation.

We realized a rank and normal scores transformation, reliable on the SPSS 20.

5.3.2. Interpretation of results

We summarize in these flowing tables all OLS regression results of content, timeliness, technology, user support and total Web disclosure index models.

According to Abdelsalam and al. (2007), the following interpretation is basing to full rank transformation regression results.

1) Web sites based content index

Table 8: Content Model Regression

	Untransformed data			Transformed data Rank transformation			Normal Scores transformation		
Variables	β	t	Sig.	β	t	Sig.	β	t	Sig.
C		20.486	0.000		7.233	0.000		4.875	0.000
FIR.SIZE	-0.20	-0.309	0.757	-0.037	-0.584	0.56	0.011	0.164	0.87
ROE	-0.130	-1.977	0.049	-0.117	-1.833	0.068	-0.133	-2.067	0.04
LIQU	-0.027	-0.392	0.696	0.024	0.358	0.72	0.007	0.105	0.917
LEVR	-0.068	-0.982	0.327	-0.068	-0.979	0.329	-0.071	-1.020	0.309
CON.OWN	0.264	4.428	0.000	0.262	4.104	0.000	0.261	4.075	0.000
IT.SEC	0.118	1.849	0.066	0.150	2.376	0.018	0.12	1.879	0.062
AGE	0.086	1.346	0.180	0.076	1.198	0.232	0.09	1.405	0.162
BIG 4	-0.358	-5.632	0.000	-0.375	-5.908	0.000	-0.349	-5.454	0.000
R^2	0.252			0.267			0.250		
R^2 adjusted	0.22			0.235			0.218		
F- ratio	7.906			8.545			7.822		
F. Sig	0.000			0.000			0.000		
Durbin- Watson	1.834			1.687			1.760		

Content Web sites regression model is significant. It explain 22 percent of variation measured by the Adjusted R^2 and it is significant at p= 0.000, using untransformed and transformed data.

OLS Rank transformation regression indicates that four explanatory variables are significant: profitability (p= 0.049), ownership concentration (p= 0.000), information technology sector (p= 0.066) and BIG 4 (p= 0.000). Contrary to our expectations, we find a significant and negative relationship between firm profitability and content index.

Indeed, contrary to the sign excepted, the coefficient of concentration ownership is positive. Abdelsalam and al. (2007) showed that no significant relationship exists between major ownership and general content index through London companies Web sites.

Our results demonstrated a significant and positive relationship between information technology sector and content index. Information technology firms are more susceptible to disclose financial information through their sites than others sectors, (Boubaker and al. (2012)).

The coefficient of BIG 4 variable is significant and negative. Xiao and al. (2004) demonstrated that the auditor quality is significantly and positively associated to the Web based content scores of listed Chinese companies.

Thus, we find no evidence of a significant relationship between size firm, liquidity, leverage, age and Web based content index.

2) Web based timeliness index

We not support any significant evidence between firm specific characteristics and the Web sites based timeliness index.

3) Web sites based technology index

Table 9: Timeliness Index Model Regression

	Untransformed data			Transformed data Rank transformation			Normal Scores transformation		
Variables	β	t	Sig.	β	t	Sig.	β	t	Sig.
C		9.166	0.000		4.726	0.000		-0.126	0.900
FIR.SIZE	-0.088	-1.197	0.233	-0.098	-1.355	0.177	-0.086	-1.189	0.236
ROE	0.000	-0.005	0.996	0.033	0.454	0.651	0.029	0.399	0.69
LIQU	-0.091	-1.153	0.250	-0.081	-1.048	0.296	-0.07	-0.904	0.367
LEVR	0.071	0.905	0.367	0.077	0.976	0.330	0.082	1.038	0.300
CON.OWN	0.047	0.65	0.517	0.04	0.547	0.585	0.071	0.98	0.328
IT.SEC	-0.097	-1.347	0.180	-0.114	-1.589	0.114	-0.069	-1.337	0.183
AGE	-0.006	-0.076	0.939	0.006	0.079	0.937	0.011	0.148	0.882
BIG 4	0.025	0.351	0.726	0.032	-0.445	0.657	0.022	0.305	0.760
R^2	0.044			0.048			0.043		
R^2 adjusted	0.004			0.007			0.002		
F- ratio	1.090			1.184			1.057		
F. Sig	0.372			0.310			0.396		
Durbin- Watson	1.781			1. 848			1.784		

Table 10: Technology Index Model Regression

	Untransformed data			Transformed data Rank transformation			Normal Scores transformation		
Variables	β	t	Sig.	β	t	Sig.	β	t	Sig.
C		11.648	0.000		4.631	0.000		-1.204	0.230
FIR.SIZE	-0.191	-2.684	0.008	-0.149	-2.143	0.033	-0.153	-2.194	0.029
ROE	-0.022	-0.309	0.758	-0.194	-2.784	0.006	-0.157	-2.262	0.025
LIQU	0.113	1.473	0.142	0.106	1.424	0.156	0.091	1.213	0.227
LEVR	-0.016	-0.212	0.833	0.004	0.05	0.96	0.008	0.105	0.917
CON.OWN	0.18	2.566	0.011	0.167	2.398	0.017	0.195	2.811	0.005
IT.SEC	0.108	1.547	0.124	0.1	1.460	0.146	0.094	1.366	0.174
AGE	-0.023	-0.326	0.745	-0.002	-0.027	0.979	0.02	0.282	0.779
BIG 4	0.074	1.070	0.286	0.094	1.353	0.178	0.084	1.204	0.230
R^2	0.105			0.128			0.120		
R^2 adjusted	0.067			0.091			0.083		
F- ratio=							3.025		
F. Sig	0.007			0.001			0.002		
Durbin- Watson	1.518			1.541			1.550		

The technology index model is significant at 0.007, employing both untransformed and transformed data. According to the OLS rank transformation regression, we find that firm size, profitability and concentration ownership are significantly related to technology index.

Contrary to the sign excepted, the results do not verify the positive influence of firm size and profitability to the technology index.

In opposition in our expectations, we find that ownership is significantly and positively related to the level of Web sites technology.

According to this result, we can conclude that principal shareholders encourage their companies to investigate more on the Web site technology.

They underline the importance of technology, as a principal of IFR dimension, helping the users to acquire reliable electronic information.

4) Web based User support index

Table n°11 illustrates that one coefficient is significant: the presence of major shareholders affects significantly and negatively Web based user support index.

In addition, we find no significant relationship between others specific firm characteristics and user support index.

5) Total Web disclosure index

Table 11: User Support Index Model Regression

	Untransformed data			transformed data Rank transformation			Normal Scores transformation		
Variables	β	t	Sig.	β	t	Sig.	β	t	Sig.
C		9.039	0.000		5.567	0.000		-0.028	0.977
FIR.SIZE	-0.027	-0.372	0.710	-0.014	-0.197	0.844	-0.035	-0.480	0.632
ROE	-0.081	-1.101	0.272	-0.102	-1.414	0.159	-0.098	-1.363	0.175
LIQU	-0.052	-0.661	0.509	-0.045	-0.588	0.557	-0.027	-0.356	0.722
LEVR	0.103	1.327	0.186	0.117	1.487	0.139	0.110	1.404	0.162
CON.OWN	-0.169	-2.350	0.020	-0.191	-2.650	0.009	-0.183	-2.548	0.012
IT.SEC	0.076	1.071	0.286	0.063	0.889	0.375	0.081	1.139	0.256
AGE	0.055	0.766	0.445	0.046	0.644	0.521	0.06	0.821	0.407
BIG 4	-0.016	-0.220	0.826	0.010	0.140	0.889	-0.008	-0.109	0.931
R^2	0.057			0.064			0.061		
R^2ajusted	0.017			0.024			0.021		
F- ratio	1.427			1.609			1.520		
F. Sig	0.188			0.125			0.125		
Durbin- Watson	1.646			1.644			1.617		

Table 12: Web Disclosure Index Model

	Untransformed data			Transformed data Rank transformation			Normal Scores transformation		
Variables	β	t	Sig.	β	T	Sig.	β	t	Sig.
C		23.616	0.000		7.767	0.000		-4.523	0.000
FIR.SIZE	-0.060	-0.903	0.368	-0.073	-1.133	0.259	-0.021	-0.323	0.474
ROE	-0.136	-2.038	0.043	-0.134	-2.075	0.039	-0.015	-2.303	0.022
LIQU	-0.034	-0.476	0.635	0.033	0.417	0.634	0.017	0.238	0.818
LEVR	-0.039	-0.546	0.586	-0.037	-0.526	0.599	-0.035	-0.489	0.626
CON.OWN	0.268	4.102	0.000	0.241	3.728	0.000	0.246	3.793	0.000
IT.SEC	0.120	1.851	0.066	0.551	2.423	0.016	0.131	2.035	0.043
AGE	0.054	1.294	0.197	0.086	1.343	0.181	0.082	1.258	0.210
BIG 4	-0.323	-4.998	0.000	-0.353	-5.500	0.000	-0.330	-5.097	0.000
R^2	0.224			0.250			0.232		
R^2ajusted	0.191			0.218			0.199		
F- ratio	6.794			7.844			7.086		
F. Sig	0.000			0.000			0.000		
Durbin- Watson	1.828			1.672			1.740		

Table n°12 showed that the R^2 adjusted of this model verify that the explanatory variables explain the variance of total index by 25 percent and this model is significant at 0.000, examining both untransformed, rank and normal scores transformation.

Full rank transformation regression indicates that firm size is not significant related to the Web disclosure index.

This finding is consistent with Pichegger & Wagenhofer, (1999), Nurunnabi & Hossain, (2012) and Turrent & Ariza, (2012). We not support the first hypothesis (H1).

In opposition to our expectations, the OLS results indicate that profitability is significantly and negatively associated with this index.

Ashbaugh and al. (1999), Ismail, (2002) and Elsayed and al. (2010) not support a significant evidence related profitability and total Web disclosure index. We reject the second hypothesis (H2).
We not find a significant relationship between firm liquidity and leverage and the extent of Web financial disclosure. The results are consistent with Abouerta & Hussien, (2017).
The H3 and H4 hypothesis are not supported.
Contradictory to the signs expected, the finding signals that ownership structure is significantly and positively associated to the corporate Web disclosure level. H5 hypothesis is not supported
The multivariate analysis information technology sector is significantly and positively related to the Web disclosure level. This findings confirms with Xiao and al, (2004) and Boubaker and al. (2012)
We support that this variable influence the financial information diffusion through European Web sites and we confirms our H6 hypothesis.
Auditor quality, as a control variable, affects significantly and negatively the Web disclosure level.

6. Conclusion

The main objective of this study is to analyze Web disclosure practices. Specially, we examine the relationship between firm specific characteristics and the level of financial disclosure through corporate Web sites of 197 listed European groups.
We realize An Ordinary Least Squares (OLS) regression, which the continuous variables needs an appropriate adjustments. According to the previous accounting literature, we accomplish Web disclosure and continuous explanatory variables' transformation. There are full rank and normal scores transformation.
OLS rank scores regression showed that profitability, ownership concentration, information technology sector and BIG 4 significantly related to the Web content index. Firm size, profitability and concentration ownership influence significantly the Web technology index and we find a significant relationship between the presence of major shareholders and user support level.
We determine that four exogenous variables affect significantly the Web disclosure level. However, information technology sector is only significantly and positively associated with the total Web disclosure. Also, we support that this variable as the factor identified the Web disclosure practice in Europe.
This study is subject to some limitation. We consider that number of countries selected is inappropriate to demonstrate the corporate Web disclosure practices between continental and Anglo-Saxon countries. That also, we can't generalize our findings, with its proper to European countries, which are imposed to apply the transparency directive requirements.
Further researchers will examine and compare the Web financial disclosure practice in others contexts such as in MENA countries.

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