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Article

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International Journal of Business Science & Applied Management (IJBSAM)

Provided in Cooperation with:
International Journal of Business Science & Applied Management (IJBSAM)

Suggested Citation: Rose, Caspar (2015) : Listed firm's level of stakeholder transparency: The comply or explain evidence from the Danish corporate governance code, International Journal of Business Science & Applied Management (IJBSAM), ISSN 1753-0296, International Journal of Business Science & Applied Management, s.l., Vol. 10, Iss. 2, pp. 1-15

This Version is available at:
https://hdl.handle.net/10419/190661

Int. Journal of Business Science and Applied Management, Volume 10, Issue 2, 2015

Listed firm's level of stakeholder transparency - The comply or explain evidence from the Danish corporate governance code

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Abstract

This article analyzes how Danish listed firms comply with the Danish Corporate Governance Code's recommendations regarding the categories: Role of shareholders, role of stakeholders and transparency. It is shown that the number of recommendations can be explained by six different underlying factors which account for the vast majority of the variation. The analysis reveals that the official classification of the three different sections in the Danish corporate governance must be abandoned. It is interesting to note that even though the "comply or explain" principle assumes that a meaningful explanation is equally good as compliance - the analysis documents that the vast majority of the firms complies with the recommendations. The article introduces a new methodology to measure the degree of compliance within these specific areas. This categorization serves as input for a multivariate analysis that explores how the different recommendations covariate as well as can be placed into distinct discrete groups. The policy implication is that future code revisions should rely on a multivariate approach when seeking to classify and structure the different code sections regarding the firm's stakeholders. Otherwise, there is a risk that board members may associate a large number of recommendations as mechanistic "tick the box" exercises, which does not add value.

Keywords: corporate governance, transparency, compliance, comply or explain, factor and cluster analysis

Acknowledgements: I am grateful to Nicolai Søpstand for excellent and careful research assistance.

1 INTRODUCTION

During the last decade most developed countries have issued their own corporate governance codes that vary in scope and size accordingly to institutional differences, but transparency is an important common denominator, see Aguilera and Cuervo-Cazurra (2009) for an overview. The main objective of such recommendations is to increase investor confidence assuring that executive management and board members serve the interests of shareholders by providing sufficient of information about a firm's corporate governance structure. Transparency is a key ingredient facilitating shareholders to actively participate at the AGM or alternatively at investor meetings. However, transparency is not only relevant towards the owners, but also in relation to a number of other key stakeholders see e.g. Freeman (1990) such as creditors, customers, suppliers, the local community, NGOs, the media etc.

There has been a relatively large attention to the potential value effect of corporate governance compliance, while there is only little evidence on how the different individual recommendations vary and covariate as well as can be classified into distinct groups. This article analyzes Danish firm's corporate governance compliance. Furthermore, it also presents a novel study of the interrelationship between the individual recommendations in the first three sections of the Danish corporate governance code.

Effective communication with different stakeholders is vital in order to build trust as well as to create visibility on the stock exchange. Listed firms, especially smaller firms may find it difficult to attract and maintain investor's attention. As a consequence, a firm must not only identify its key stakeholders, but it also needs to evaluate the different stakeholders relative importance for the firm's ability to run it's business, which may be expressed as their "license to operate" as a publicly listed company.

National corporate governance codes seek to accomplish similar goals but their structure and content e.g. on transparency varies substantially.

The point is that the notion of transparency in the form of soft law is interpreted differently in different countries. Moreover, transparency in the Danish code is considered to be broader as it does not rely on a narrow legal perspective. In the UK, the traditional corporate governance code is even supplemented with a stewardship code that contains specific recommendations to investors in the listed companies. The purpose is to formulate good practice that aspire investors. The disclosure by investors will assist companies to understand the approach and expectations of their major shareholders. The Financial Reporting Council states that the recommendations *"will assist those issuing mandates to asset managers to make a better informed choice, assist managers to understand the expectations of current and potential clients, and may help investors interested in collective action to identify like-minded institutions"* (Homepage of FRC).

The Danish corporate governance code was introduced in 2001 and during the following years it has undergone major changes. The code is soft law and builds on the "comply or explain" principle. The formal work of developing and maintaining the Danish Code is delegated to the Danish Corporate Governance Committee which consists of representatives from the listed firms, investors as well as advisors. The Committee emphasizes that *"Transparency is essential to ensure that shareholders and other stakeholders are able to evaluate the performance of publicly traded companies."* (page 3 in the Code recommendation from April 2010).

The Danish Code consists of 9 separate sections dealing with different aspects of corporate governance. This article focuses on the first three sections i.e. the role of shareholders and their interactions with the management of the company, the role of stakeholders and their importance to the company's corporate social responsibility as well as openness and transparency.

The vast majority of national codes are typically quite comprehensive since they contain a large number of specific recommendations that the board of directors must adhere to or alternatively give a reasonable explanation why a firm has decided not to follow "best practice", see Bauwhede and Willekens (2008). As a consequence, there is a potential risk that too many detailed recommendations could stimulate a "tick the box" mindset in which formality gets first priority at the expense of substance. By substance is meant that board member's norms are changed in order to stimulate an effective mechanism to discipline a certain type of behavior, see Fasterling (2012).

The article is organized as follows. A literature overview is presented in the next section which is followed by a description in section three of the data as well as the methodology to quantify the level of compliance. The degree of stakeholder compliance of Danish firm's is presented in section four. The results of the multivariate analysis are presented in section five. The article ends with a conclusion and discussion.

2 LITERATURE

Fasterling (2012) links norms to companies' compliance disclosure where he argues that disclosure regimes may have negative effects if disclosure addresses use disclosed information without questioning it. The author points to an interesting key point i.e. if there is no legal obligation to "comply or explain", a company could decide to send a positive signal to the public by voluntarily stating its compliance with a well-reputed corporate

governance code. In essence the author argues that compliance disclosure regimes could provide specific opportunities for explicit and empirically traceable public discourse on applicable normative standards and thereby facilitate the identification of adequate norms for regulating business activities.

The notion of soft law in relation to compliance is analyzed in Hooghiemstra and van Ees (2011) who analyze a sample of 126 listed Dutch firms. They find that the overall compliance rate is quite high arguing that firms fear about their reputation if they score low. However, they reveal that firms tend to use similar arguments for non-compliance, hence the authors argue that the uniformity in adopting the standard of good corporate governance may not be in line with the logic of corporate governance codes, which may casts doubt on the effectiveness of using soft law.

2.1. Empirical studies

There a several studies that link corporate governance with firm performance, see e.g. Bozec and Dia (2012), Gutierrez, Isabel and Jordi Surroca (2012), Seidl and Roberts (2013), Sanderson et al. (2010) and Werder and Talaulicar (2005). However, there a quite few studies that study compliance patterns using multivariate statistics. An exception is Talaulicar and Werder (2008) who rely on cluster analysis to identify discrete groups of companies with similar patterns of code compliance. They find eight patterns of compliance which are characterized by distinct forms of code conformity. Specifically, the authors investigate whether the form of compliance with the recommendations of the German Corporate Governance Code appears to be idiosyncratic to a specific company or feature similarities across firms. The authors find that the cluster solution does not merely reflect the number of rejected code recommendations. Rather, companies with very similar rates of overall compliance with the German code are assigned to different clusters because they feature different patterns of conformity.

The issue of measurability of corporate governance compliance is crucial in the analysis. If one does not quantify the compliance in a coherent and systematic way, any result may offer poor guidance for future policy recommendations within this important area of research. Tsipouri and Xanthakis (2004) discuss this issue in their analysis of how Greek companies adhere to the OECD guidelines. They find that Greek companies demonstrate a fairly satisfactory degree of compliance although areas such as the role of stakeholders and CSR score relatively low.

According to the authors, the merit of the exercise from a methodological perspective comes in its approach towards the creation of "collectively subjective" weightings i.e. an effort to discuss the benefits of separating the rating of the market from the rating of the companies.

2.2 Transparency studies

Bushman et al. (2003) conduct a large study of transparency which the authors define as the availability of firm specific information to those outside publicly listed firms. The authors rely on a factor model of transparency measures worldwide in order to analyze the underlying structure. Specifically, they find that their factor analysis isolates two factors from the array of country-level measures of the firm-specific information environment. The first factor, interpreted as financial transparency, captures the intensity and timeliness of financial disclosures, and their interpretation and dissemination by analysts and the media. The second factor, interpreted as governance transparency, captures the intensity of governance disclosures and, to a lesser extent, the intensity and timeliness of financial disclosures used by outside investors to hold officers and directors accountable. Thus, the authors investigate whether these factors vary with countries' legal/judicial regimes as well as political economies. Their main statistical result is that the governance transparency factor is primarily related to a country's legal/judicial regime, whereas the financial transparency factor is primarily related to political economy. The authors use six different measures to quantify the corporate reporting environment in combination with dissemination of information by the media. One may always discuss how transparency is measured, but the authors results are interesting and highly relevant as the authors are some of the very few scholars who rely on multivariate analysis of firm transparency within corporate governance.

The link between transparency and financial ratios has been studied by Adiloglu and Vuran (2012) who study transparency in listed Turkish firms. They argue that high compliance with the corporate governance standards means more accountable and transparent companies for investors. Specifically, they conduct MANOVA analysis to examine the relationship between the calculated transparency levels and financial ratios. The results reveal that transparency level has statistical differences among the group means of return on asset, total debt/total assets, long-term debt/total assets and corporate governance index variables.

The challenge of how to measure transparency in corporate governance context is also analyzed by Stefanescu (2014) who study corporate governance disclosure in the EU in relation to how firms comply with the OECDs corporate governance guidelines. The author develops a disclosure index which consists of sub-indices within different categories such as owners, boards, executives, committees and stakeholders. Stefanescu measures how close each code in the sample was to the recommendations for good corporate governance using Jaccard's similarity coefficient in order to measure the disclosure level. Their results reveal that those codes

developed through the collaborations of a wider range of specialist from various economic fields and issued by special committees set for this purpose appeared to best approximate the ideal model of best practices for corporate governance transparency/disclosure.

There are several studies that seek to explore the link between financial performance and the level of corporate governance compliance. However, these studies do not offer a coherent methodology for quantifying or measuring the degree of compliance. The issue of transparency is the focus of the second category of studies that rely on quantitative studies. The aim is to obtain a better understanding of the notion of transparency, but there seems not to be common line of research within this group. This article seeks to fill this research gap.

3 DATA AND METHODOLOGY

This article analyzes the governance practices associated with the Danish corporate governance recommendations introduced in April 2010. This version of the governance recommendations apply to all listed companies with fiscal years ending in 2010 or mid 2011 (hereafter; fiscal year 2010). Thus, this article addresses the fiscal year 2010 (ranging from the calendar year 2010 as well as the period mid 2010/2011).

When evaluating the companies with respect to corporate governance practices the analysis relies on all relevant publicly available information. The main sources of information are reported governance practices, relevant material on the companies' web pages, and annual reports for the fiscal years 2010. The data has been carefully manually collected.

There are six specific recommendations regarding the role of shareholders, three on the role of stakeholders and transparency as well, see Recommendations on Corporate Governance (2010).

All companies have been assessed based on how they *communicate* their governance practices using a binary scale of 0 or 1 point for each recommendation. If a company has chosen to comply with a given recommendation, and this can be verified, the company receives a score of 1 (denoted: Complies). If a company claims to comply but its practice proves otherwise it receives a score of zero (Complies poorly). Companies that have chosen not to comply with a given recommendation score 1 if the explanation is accompanied by a reasonable argument (Explains). Finally in case a company does not explain why a recommendation is chosen not to be followed, or the explanation does not seem justified, a 0 score is given (Explains poorly). Most recommendations are divided into sub recommendations, but since each of these sub recommendations are considered equally important to those with only a single recommendation, they have all been treated similar, and hence they all count as one each. This is to elude a discussion of the relative importance or weighting of the different recommendations.

The different recommendations vary considerably in nature. Some are easily verified due to being very specific with respect to disclosure, while others are harder to verify. This means that a company who claims to be complying with a non-verifiable recommendation cannot be penalized since it cannot be checked if the compliance statement is in fact true. Companies who have chosen not to comply with such recommendations can be given the score 0 if their explanation is not satisfying.

As per September 2011 there were a total of 188 companies listed on Nasdaq OMX Copenhagen. The final sample consisted of 155 companies. There are five main reasons for this: 1) Some companies are listed with two share classes. 2) Some companies are listed as separate entities, but are in essence organized in a very similar manner. To illustrate, Formuepleje/FormueEvolution consist of a series of listed companies, where the main difference is their investment profile. Including all Formue companies would have yielded the same result for all companies, thus resulting in a total sample score skewed disproportionately towards the score of these companies. 3) Some companies have been liquidated or taken private before we got to assess their governance practices, so information were no longer available. 4) Some companies are also listed in other countries, and have therefore chosen to adhere to other governance frameworks. 5)

To ensure the highest possible validity, all companies have afterwards been contacted via e-mail and presented the recommendations where they had been given a score of 0. The companies were given the opportunity to respond, and argue their case, if they believed the evaluation was incorrect. When received the companies' feedback the initial scores were reassessed, and changed accordingly if the arguments had any merit. In order not to favor companies who responded, all other companies who had been given 0 with respect to these recommendations were also reassessed a second time.

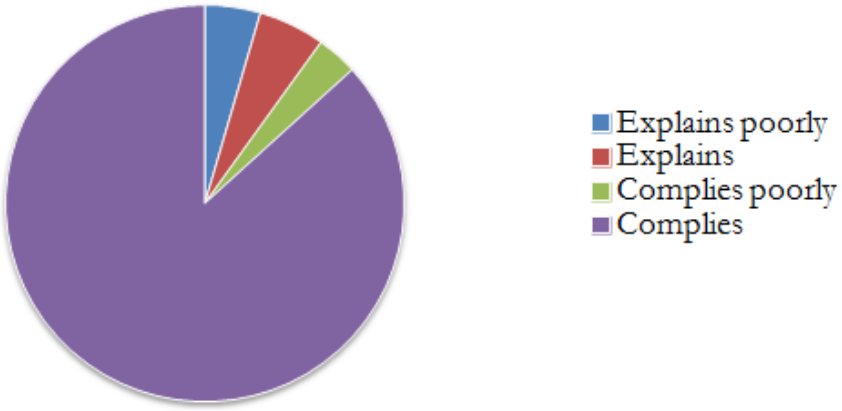
The response rate was less than five percent. In all cases it was observed that only firms with relatively low corporate governance scores did respond. As such, there is an inherent bias in the respond rate, as high complying firms would rarely respond. However, only in a very few cases, we had to change the original assessment.

4 DISCUSSION

This section presents the scores given on the individual recommendations. The following figures measure the percentage of companies on the vertical axis, and the respective recommendations on the horizontal axis. The reader should note that the vertical axis may be truncated in some of the figures in order to make the figures easier to interpret. Each column in the following figures incorporates up to four different assessments of the companies' attitude towards the respective recommendations, and each column sums to 100%.The list below describes each of the four categories:

Complies = Companies that comply with the recommendation; 1 point.
Complies poorly = Companies claim to comply, but in fact does not; 0 point.
Explains = Companies who does not follow the recommendation and explains well; 1 point.
Explains poorly = Companies who does not follow the recommendation and explains poorly; 0 point

Figure 1 Classification of compliance (simple average)

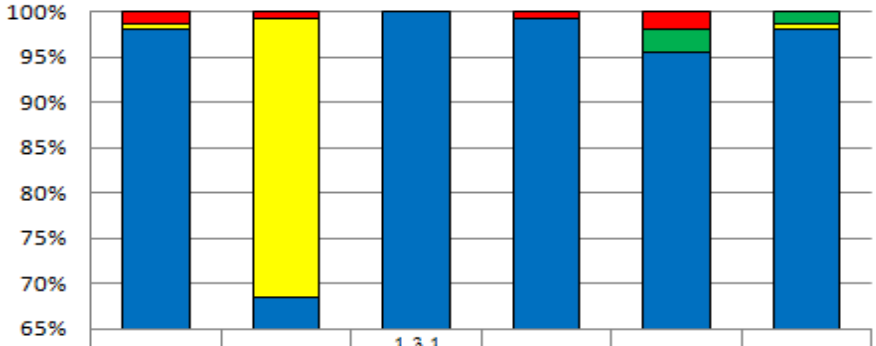


The classification of the four possibilities is shown in figure A that displays the distribution. The overall impression is that the firms comply (87) whereas there is a quite equal distribution regarding the three other categories.

4.1. The role of shareholders

The total number of recommendations studied is equal to the number of firms multiplied by the number of recommendations (155 companies x 12 recommendations) i.e. 1380.

Figure 1 Role of the Stakeholders



	1.1.1 Investor relations activities	1.2.1 Capital/share structure	1.3.1 Shareholders' attendance at AGM	1.3.2 Physical/electronic AGM	1.3.3 Proxies to individual items	1.3.4 Management present at AGM
Explains poorly	1%	1%	0%	1%	2%	0%
Explains	0%	0%	0%	0%	3%	1%
Complies poorly	1%	31%	0%	0%	0%	1%
Complies	98%	68%	100%	99%	95%	98%

Figure 1 displays the recommendations addressing the role of the shareholders which are generally characterized by a high degree of compliance. Nearly all listed firms have their own IR department or an IR responsible person who may facilitate an ongoing dialogue between the company and shareholders. This may help the board to get a better understanding of the investor's preferences and expectations.

Active ownership by shareholders can only be formally exercised at the AGM. Shareholders have a number of legal rights such as the right to ask questions, formulate proposals, appoint members of the board, and most importantly the right to vote. Therefore it is positive that all companies seek to promote shareholders attendance at the general meeting.

There is a separation between ownership and control in many listed companies due to the existence of various share structures that allow some shareholders to have more votes than their cash flow stakes. This issue has been debated for several years, especially in the EU. It is documented that in the vast majority of EU member states, a large proportion of listed firms have share structures that deviate from the "one share – one vote" principle, see report by the EU Commission (2007) as well as Rose (2008) for an analysis of the one share – one vote controversy.

Initially, the first Danish corporate governance code viewed such share deviations as harmful hence firms should explain why their share structure deviated from the "one share – one vote" principle. However, this was later considerably modified and the recommendation now states:

"1.2.1. The Committee recommends that the central governing body every year evaluate whether the company's capital and share structures continue to be in the interests of the shareholders and the company and account for this evaluation in the management commentary in the annual report and/or on the company's website" (CG 2010, p. 7).

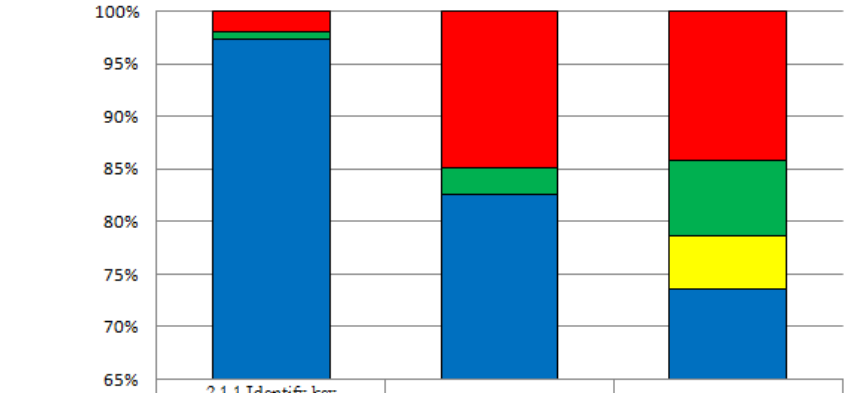
Figure 1 shows that several companies were given a score of 0, despite claiming to comply, which is surprising given the considerable debate about this issue. The main issue here is whether claiming that both share as well as capital structure is deemed to be in the interest of the shareholders, or if more substantive argumentation is warranted. When judging the response to this recommendation it has been decided to follow an approach where deviations from 'one share, one vote' require more substantive arguments for why this is the best approach. When it comes to capital structure it is the opinion that investors are capable of making qualified assessments on their own behalf if the current capital structure is reasonable and justifiable.

Most foreign shareholders do not attend the AGM so having the possibility to arrange an AGM electronically is surely an ideal way to promote active ownership and dialogue with top management. The Danish Company Act has for several years offered a legal possibility to arrange an AGM electronically, which has also been enacted by the EU in the Shareholders Rights Directive. However, despite that the legal setup is already in place there are several technical and practical obstacles that are not easily solved e.g. regarding language and practical voting issues, including IT safety. As a consequence, the number of electronically arranged AGMs has been extremely limited so far, but there is reason to believe that this will change in the coming years as firms score extremely high on this matter.

One of the more controversial issues within the Danish corporate governance debate has been the use of "blanco proxies" where the supervisory board sends prewritten proxies based on the company's shareholder register. Shareholders only need to to sign the proxy form and return it by pre-stamped mail giving the supervisory board authority to vote on all matters in the name of the shareholder. Giving the board "blanco" proxies provides management with a considerable degree of power, so when shareholders are to consider each individual item on the agenda, management may find it harder to "push" their own agenda through at the AGM. Moreover, in a situation of a proxy fight in a hostile takeover this will also weaken target management's power if it seeks to deter a bidder's attempt to acquire the firm. Therefore it is positive that so many firms comply with the recommendation to issue proxies with individual items. The Danish code also requires that both the executive board and supervisory board are present at the AGM. Figure 1 shows that this is fully supported by the firms.

4.2. The role of stakeholders

Figure 2 Role of the Stakeholders



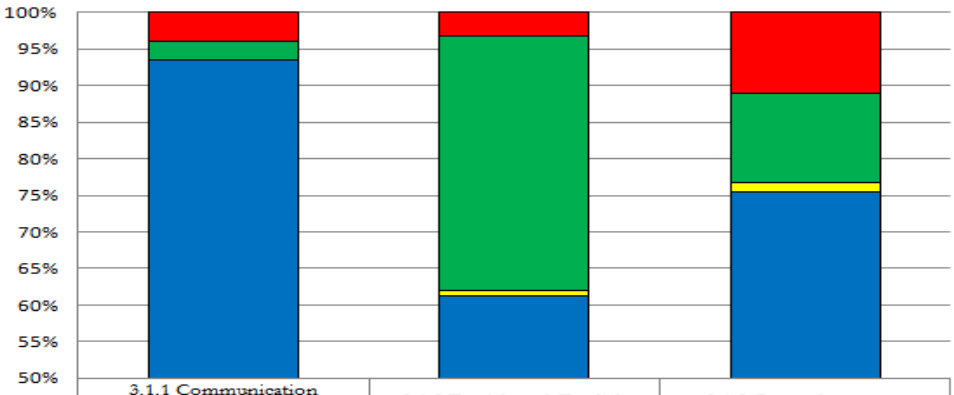
	2.1.1 Identify key stakeholders	2.1.2 Stakeholder policy	2.2.1 CSR
Explains poorly	2%	15%	14%
Explains	1%	3%	7%
Complies poorly	0%	0%	5%
Complies	97%	83%	74%

Chapter 2 in the Danish Code deals with the role of a firm's stakeholders. Figure 2 shows that companies have identified their key stakeholders in accordance with 2.1.1 whereas only 15 percent explains poorly on their stakeholder policy i.e. 15% of the companies have chosen to not adopt a stakeholder policy (2.1.2), without explaining convincingly why this approach is chosen.

Regarding the adopting a CSR policy, 21% of the companies have chosen to deviate. Of these companies two thirds, totally 14% of the companies are not arguing reasonably why this approach is chosen. 5% claims to have such a policy, but does not communicate their approach. This is a fairly interesting result, as listed companies are legally required to address CSR. The Danish Parliament has passed a law that requires large firms to report on how their use of CSR can contribute to support responsible growth giving companies a competitive advantage from implementing CSR (policies, actions results and actions). The requirement is codified in the Danish Accounting Act (Årsregnskabsloven) and was enacted January 1. 2009, so companies have had a few years to adapt to the new rules. However, despite the legal obligations, a relatively large proportion of the firms do not address CSR sufficiently, as 14 percent explains poorly and 5 percent complies poorly. This corresponds to the findings by Tsipouri and Xanthakis (2004) mentioned in section 2.1 where the compliance degree within CSR also was found to be relatively poor.

4.3. Transparency

Figure 3 Transparency



	3.1.1 Communication strategy	3.1.2 Danish and English	3.1.3 Quarterly reports
Explains poorly	4%	3%	11%
Explains	3%	35%	12%
Complies poorly	0%	1%	1%
Complies	94%	61%	75%

Figure 3 addresses transparency, particularly with emphasis on written communication to stakeholders. Most companies have adopted a communication strategy in accordance with 3.1.1.

A large proportion i.e. 38% of the companies has chosen to not communicate information to the market in both Danish and English. Most firms in this group put forth reasonable arguments for choosing this practice. Most companies which do not communicate in both languages have opted to communicate only in Danish. A common argument among this group is that they have a local focus and that targeted shareholders are Danish, which may be challenged as foreign investors now account for more than half of the market cap on the Copenhagen Stock Exchange.

Regarding publishing quarterly reports, close to 23% of the companies have chosen to deviate from this. Around half of these companies have not explained their deviation with reasonable arguments, where typical claims that are made, are that quarterly reports will not contribute with additional valuable information about the company's situation and prospects.

This article has formulated a new approach to quantify the level of corporate governance compliance. It builds on previous work e.g. by Talaulicar and Werder (2008) and Stafanesco (2014), but it differs in the categorization process, as it relies on a coherent and more dense approach.

5. STATISTICAL ANALYSIS

This article makes use of multivariate analysis or more specifically, principal component, factor and cluster analysis. The primary focus of factor analysis is to explain the interrelationships among a number of original variables. Table 1 shows descriptive statistics for the dataset.

Table 1Variables

	Mean	Std Dev	N
Investor relations activities	0.980	0.137	156
Capital/share structure	0.685	0.465	156
Physical or electronic AGM	0.993	0.080	156
Proxies to individual items	0.980	0.137	156
Management present at the AGM	0.993	0.080	156
Indentify key stakeholders	0.980	0.137	156
Stakeholder policy	0.852	0.358	156
CSR	0.807	0.395	156
Communication strategy	0.961	0.192	156
Danish and English	0.961	0.192	156
Quarterly reports	0.878	0.328	156

Table 1 shows that the overall compliance within the three sections on transparency is remarkable high. The highest value is Physical or electronic AGM whereas the lowest value concern with companies capital and share structure. Most of the variables are close to one i.e. 100 percent compliance. The standard variation is also quite high among the firms.

5.1 Principal component analysis

The total number of recommendations within the first three chapters in the Danish Corporate Governance Code equals 12 hence we have 12 original variables. Since all firms comply with Shareholders attendance at the AGM, this means that there is no variation and therefore this variable has been excluded from the analysis. In order to simplify the description of the set of board variables, one may wish to transform the 11 variables into new uncorrelated variables called principal components, hence the name principal component analysis. This is an exploratory technique that enables one to reduce the dimensionality of the problem i.e. reduce the number of variables without losing much of the information, see e.g. Chatfield and Collins (1980) for a description of the model, or Rose (2006) for a study of board composition. The model is a mathematical technique, where the researcher does not need to specify any underlying model, such as specifying an "error term".

The analysis focuses only on the variance, as the mean is normalized to zero. Each principal component is a linear combination of the original variable, and the measure of the information conveyed by each principal is its variance. The principals are arranged in order of decreasing variance. Let $\mathbf{X}^{\mathbf{T}} = (X_1,\ldots,X_{11})$ be a 11 dimensional random variable representing the vector of the twelve board variables in the analysis. The problem consists of finding a new set of variables denoted $Y_1,\ldots Y_{11}$ which are uncorrelated with decreasing variance, from first to last, where a_j^T is a vector of coefficients. Since each Y_j is a linear combination of the X's, we have.

$$Y_j = a_{1j}X_1 + a_{2j}X_2 + ... + a_{12j}X_{11} = a_j^T X \qquad \textbf{(1)}$$

The first principal Y_1 is found choosing a_1, so that Y_1 has the largest possible variance, where the objective function equals $Var(Y_1) = a_1^T \Sigma a_1$,and Σ denotes the covariance matrix, subjected to the orthogonal transformation $a_1^T a_1 = 1$, and so forth with Y_2 etc. (which also is uncorrelated with Y_1).

Estimating the components turns out to be identical to finding eigenvalues and eigenvectors (the vector of a_j's), where the former is the variance of each component (the sum of eigenvalues equals the original variance). Table 2 displays the results of the principal component analysis generated by the SAS statistics program.

Table 2 Eigenvalues of the Correlation Matrix: Total = 11 Average = 1

	Eigenvalue	Difference	Proportion	Cumulative
1	2.026	0.676	0.184	0.184
2	1.350	0.186	0.122	0.307
3	1.164	0.041	0.105	0.412
4	1.122	0.097	0.102	0.515
5	1.025	0.022	0.093	0.608
6	1.002	0.142	0.091	0.699
7	0.859	0.114	0.078	0.777
8	0.744	0.049	0.067	0.845
9	0.694	0.056	0.063	0.908
10	0.638	0.266	0.058	0.966
11	0.372		0.033	1.000

Table 2 displays the associated eigenvalues, i.e. how much each principal component explains of the variance in the board data. The first component has a value of 2,026 and this component accounts for 18,4 percent of the variation in the data. Six components (all with a value above 1) seem to explain the interrelation among the variables. These six components explain nearly 70 percent of the variation in the dataset.

5.2 Factor analysis

Factor analysis has been used in many different studies where the aim is to study the underlying structure of a set of variables, see Afifi et al. (2004) for a description of factor analysis. Factor analysis represents each of the variables as a linear combination of a smaller set of common factors plus a unique to each of the response variables. As a consequence, on may wish to use factor analysis, which attempts to explain the correlation between a set of variables, in terms of a small number of factors. Contrary to principal component analysis, factor analysis is not only concerned with explaining the variance, but in particular the covariance structure of the variables. A major assumption is that it is not possible to observe these factors directly i.e. so-called latent variables.

Factor analysis is applied when, e.g. there is not a clear distinction between dependent and independent variables, but when one seeks to explain and identify, which underlying factors that account for the variation among the variables.

The factor model assumes that there are m underlying factors (less than the number of variables), which are denoted f_1, f_2, f_m and that each observed variable is a linear function of these factors, together with a residual unique factor. The analysis specifies that the number of underlying factors is equal to six, based on the previous principal component analysis, based on the so-called Kaiser's rule, see Stevens (2002). The model can be written as

$$\mathbf{x} = \mathbf{\Lambda f} + \mathbf{u} \qquad (1)$$

Let x be the vector of the twelve variables and f the vector of the six factors with coefficient matrix Λ where λ_{jk} is called the factor loading i.e. the loading on the j'th variable on the k'th factor. The vector u_j describes the residual variation specific to the j'th variable. The six factors are usually denoted the common factors, while the residuals are called the specific factors.

The model relies on a number of assumptions. First the specific factors are assumed to be independent of one another and of the common factors. Thus, the common factors are usually assumed to be independent of each other, although this assumption can be relaxed when the factors are rotated (if an orthogonal rotation is not applied).

Since the variables have been standardized to have zero mean, the factors also have zero mean and unit variance although the variances of the individual factors may vary (let the variance of u_j be denoted by ψ_j). From the above assumptions it is easily shown that the covariance of x, which is denoted as Σ can be written as expression (2), where Ψ is the off diagonal terms of Σ (the co-variances).

$$\Sigma = \Lambda\Lambda^T + \Psi \qquad (2)$$

The above equation is of crucial importance, since it demonstrates that the factors explain the off diagonal terms of Σ exactly since Ψ is diagonal. This implies that finding the factor loadings is equivalent to factorizing the covariance matrix of x (given that the diagonal elements are non-negative).

In essence, the factor model breaks the variance of each variable into two parts. Since x_j is standardized, its variance equals 1 and is composed of the following two parts:

The communality, denoted by h_j^2 for variable j, i.e. the variance that is due to the common factors

The specificity denoted s_j^2 , i.e. the part of the variance that is due to the unique factor u_j.

As a consequence, the variance of variable $x_j = 1 = (h_j^2 + s_j^2)$. Table 3 shows the communality estimates.

Table 3 Final Communality Estimates: Total = 7.691513

Investor relations activities	Capital /share structure	Physical or electronic AGM	Proxies to individual items	Management present at the AGM	Indentify key stakeholders	Stake holder policy	CSR	Communication strategy	Danish and English	Quarterly reports
0.737	0.564	0.865	0.815	0.805	0.635	0.722	0.688	0.604	0.647	0.605

To illustrate, the six factors explain 74 % of the variation within the IR activities, while they only explain 56 % of the capital/share structure compliance, which is the lowest percentage. Table 3 also shows that the six factors nearly explain 87 % of the variation regarding the recommendation on whether the general meeting should be conducted physically or as partly/entirely electronic general meeting. The overall picture is that the six factors explain a high degree of the total variance in the dataset.

Recall, that the purpose of factor analysis is to identify the underlying factors, which enables the researcher to more easily interpret the common factors. However, the initial factors are often not well suited for identification. As a consequence, the researcher may rotate the initial factors, so that some of the factor loadings are more close to +/- 1, and the rests are closer to zero. Technically, a rotation consists of finding new axes to represent the factors see e.g. Johnson and Wichern (2002).

There are several different rotation methods, but this analysis relies on the so-called verimax procedure that consists of an orthogonal rotation, which does not violate the assumption that the factors are uncorrelated (the communalities are also unchanged when performing verimax rotation).

Table 4 Rotated Factor Pattern (orthogonal verimax)

	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6
Investor relations activities	0.020	-0.063	0.855	0.001	0.016	-0.026
Capital/share structure	0.154	0.277	0.242	0.559	0.301	-0.028
Physical or electronic AGM	-0.060	0.006	-0.015	0.008	0.928	0.007
Proxies to individual items	0.029	-0.160	-0.148	-0.078	0.067	0.869
Management present at the AGM	-0.040	-0.124	-0.106	0.875	-0.104	-0.010
Indentify key stakeholders	0.759	-0.086	-0.216	0.068	-0.000	-0.008
Stakeholder policy	0.746	0.389	0.115	0.011	-0.007	0.008
CSR	0.250	0.726	0.026	0.001	0.301	-0.073
Communication strategy	0.640	-0.091	0.426	-0.047	-0.042	-0.019
Danish and English	-0.104	0.777	-0.103	-0.008	-0.145	0.016
Quarterly reports	-0.078	0.350	0.356	0.109	-0.146	0.561

To interpret what variables with high loadings have in common i.e. to name the factor, one needs to rely on specialist knowledge i.e. in this case knowledge about corporate governance, which inevitably may entail a degree of subjectivity. Moreover, the important thing here is that any judgment can be motivated within a corporate governance framework.

Table 4 displays that the first factor loads strongly on Identify of key stakeholders, Stakeholder Policy and Communication Strategy, issues that may be regarded as *stakeholder visibility*. The firm must identify its key stakeholders and communicate its stakeholder policy in order to stay visible.

The second factor loads heavily on Danish or English and CSR, which both are issues that are relevant for the firm's annual accounts, since the firms CSR policy must also be presented in the annual accounts. Therefore this second factor may be interpreted as the *Annual account factor*.

The third factor loads strongly on Investor Relations Activities and to a lesser extent on Communication Strategy. A firm's investor relations department/person is responsible for the communication with its

shareholders. A main objective is to make the firm attractive for existing and potential shareholders. Therefore this third factor may be entitled *shareholder visibility factor*.

The forth factor loads on Management present at the AGM as well as Capital/share structure. If a firm decides to change its share capital or capital structure it must be approved by the shareholders at the AGM where the supervisory board must explain the reasons for changing a firm's capital or share structure. To illustrate, according to Danish law, the AGM can delegate the possibility to issue new shares to the board without asking the shareholders at the AGM.

This delegation of power means that the preemptive rights for the existing shareholders are set aside as management may have discretion to conduct a rights issue to a new shareholder. Therefore this forth factor may be interpreted as the *AGM delegation of power factor*.

The fifth factor may be a bit difficult to interpret, since there is one strong positive factor loading on Physical or electronic AGM, which is followed by two other loadings both on 0,301 regarding Capital/share structure as well as CSR. However, the issues of CSR and Capital/share structure are issues that shareholders must confront its top management with at the AGM. Therefore this factor can be entitled as *AGM accountability factor*.

The last factor loads positively on Proxies to individual items as well as Quarterly reports. This factor may therefore be interpreted as *shareholder information factor*. Both are issues that are of priority when informing the owners i.e. the shareholders about the firms realized financial performance as well as future plans.

Table 5 shows the variance explained by each factor. One notices that there is not a single factor that dominates the variation in the dataset. Instead the six factors are relatively equal in describing the variation since factor 1 accounts for 1.653 whereas the last factor six accounts for 1.079.

Table 5 Variance Explained by Each Factor

Factor1	Factor2	Factor3	Factor4	Factor5	Factor6
1.653	1.546	1.204	1.104	1.103	1.079

5.3 Cluster analysis

Cluster analysis is a methodology in which one may try to combine variables into groups when group membership is not known in advance. Cluster analysis may be considered as an alternative to factor analysis although the output is quite different. When the number of variables is limited one may use a scatter diagram, but in this case one needs to rely on other ways of illustrating the grouping of variables. Cluster analysis boils down to the analysis of distance between the variables as variables which are similar are located closer to each other.

The first step is to determine the number of clusters or groups using either hierarchical or non-hierarchical methods. The data is originally divided into three sections i.e. the role of shareholders, the role of stakeholders as well as transparency. Shareholders are by definition a key stakeholder group, since they are the owners of the firm and exercise their rights at the AGM. However, there are also other important stakeholders, so it may be of interest to analyze the number of groups based on the firm's corporate governance compliance data.

This article uses a methodology entitled K-means clustering which starts by dividing the data into K initial clusters i.e. in this case three clusters. Then the means or centroids of the clusters are calculated and for a given case, the distance to each centroid is calculated. If the case is closest to the centroid of its own cluster, it is left in that cluster, otherwise it is resigned to the cluster whose centroid it is closets to and the process is repeated. The process successively finds that particular variable and the cluster producing the larger variance and splits that cluster accordingly until K clusters are obtained, see Afifi et al. (2004) for a description. The calculations are done in SAS where the program assigns each observation to the cluster with the nearest seed. The result of the analysis is shown in table that presents the cluster summary.

Table 6 Cluster Summary

Cluster	Frequency	RMS Std Deviation	Maximum Distance from Seed to Observation	Radius Exceeded	Nearest Cluster	Distance Between Cluster Centroids
1	122	0.178	1.370		2	1.168
2	21	0.295	1.306		3	1.073
3	13	0.338	1.530		2	1.073

The first cluster consists of the largest number of observations namely 122, followed by cluster two and three that consist of 21 and 13 respectively. Table 6 also reveal that the distance between the cluster centroids is quite similar and close to one.

Figure 7 K means clustering with K = 3. Initial Seeds

Cluster	Investor relations activities	Capital/share structure	Physical or electronic AGM	Proxies to individual items	Management present at the AGM	Indentify key stakeholders	Stakeholder policy	CSR	Communication strategy	Danish and English	Quarterly reports
1	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
2	0.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
3	1.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0

Root-Mean-Square Total-Sample Standard Deviation		0.26
Root-Mean-Square Distance Between Observations		1.23
Criterion Based on Final Seeds =	0.2156	

Table 7 presents how the different variables/recommendations are grouped together. All observations naturally belong to the same cluster if there is only one cluster. However, notice when there are three groups. All the variables: Physical /electronic AGM, Proxies to individual items, Management present at the AGM, Stakeholder policy, Communication strategy and Danish/English annual account now joins group two. The third group is joined by the following variables: Investor relation activities, CSR, Quarterly reports but group three is also joined by Physical/electronic AGM, Proxies to individual items, Management present at the AGM and Danish/English annual reports. Only the variable Capital/share structure remains in group one. This means that we end up having seven variables in group three and three variables in group two and a single variable in group one.

Figure 8 Statistics for Variables

Variable	Total STD	Within STD	R-Square	RSQ/(1-RSQ)
Investor relations activities	0.137	0.136	0.025	0.026
Capital/share structure	0.465	0.390	0.306	0.441
Physical or electronic AGM	0.080	0.078	0.041	0.043
Proxies to individual items	0.137	0.138	0.005	0.005
Management present at the AGM	0.080	0.080	0.001	0.001
Indentify key stakeholders	0.137	0.122	0.215	0.275
Stakeholder policy	0.355	0.222	0.612	1.582
CSR	0.395	0.286	0.480	0.924
Communication strategy	0.192	0.163	0.294	0.417
Danish and English	0.192	0.185	0.089	0.097
Quarterly reports	0.328	0.298	0.182	0.223
OVER-ALL	0.261	0.213	0.343	0.522

Table 8 depicts the cluster statistics based on the grouping of three clusters. Notice that the within standard deviation is smaller (or equal to in a few cases) to the original standard deviations. The aim is to reduce the variance or standard deviation and the ability for each variable to do so is captured in the R-square value. Notice that in the two cases where the standard deviation is not reduced i.e. Proxies to individual items and Management present at the AGM, the R-square value is nearly zero. The opposite is the case for the variables: Stakeholder Policy and CSR where the R-square value is much higher since the cluster variation is smaller than the original variation.

Table 8 also shows the R^2 values for predicting the variable from the cluster. The ratio of between-cluster variance to within-cluster variance (R^2 to 1 - R^2) also appears in the last column. The R square is for predicting the variable for the cluster where the observations: Stakeholder Policy, CSR and Capital/share Structure have the highest values. The pseudo F-statistics is equal to 39,99 an approximate expected overall R^2. The higher R square, the higher the variable contributes to the cluster formation. The last column shows the statistic (RSQ/1-RSQ). A high ratio means that the variable is important in differentiating between the clusters.

The key lesson is that the grouping and categorization in the Danish Corporate governance Codes is not at all reflected in the statistical cluster analysis. This means that future revisions of the code should consider the categorization and grouping in the first three sections using the above results.

The articles findings are related to the existing literature. Talaulicar and Werder (2008) also use cluster analysis even though their scope is slightly different. They find eight discrete groups,whereas three groups are identified in this article. The reason is that their sample covers all German corporate governance recommendations (although they do not use the quantification process as in this article). However, the article's findings are in in line with Tsipouri and Xanthakis (2004) who find that the role of stakeholders as well as CSR scores low.

6. DISCUSSION AND CONCLUSION

Transparency is a crucial element in corporate governance if listed firms want to attract capital from external investors. However, transparency cannot only be seen from the perspective of the shareholders. It must be considered from a broader perspective in which the board of directors identifies the firm's key stakeholders. This is also the main point which is emphasized in the Danish Code.

This article introduces a methodology to assess the level of corporate governance transparency in relation to the recommendations regarding the firm's stakeholders. This approach ensures that the classification of the individual recommendations is not made ad hoc in an unsystematic manner, which may serve as inspiration for corporate governance codes in other countries. The analysis reveals that the compliance level concerning the codes recommendations regarding firm's stakeholders is quite high. It is interesting to note that even though the comply or explain principle assumes that a meaningful explanation is equally good as compliance the analysis

documents that the vast majority of the firms simply complies with the recommendation i.e. they do very often explain why a firm has deviated from "best practice".

The only exception is the recommendation that a firm must explain not only its capital structure, but also its share structure e.g. if a firm has an ownership/voting ceiling, shares with dual class voting rights etc. see Rose (2002) for a description of Danish takeover defenses.

This article combines the insight from institutional knowledge, in this case about Denmark with a sound statistical analysis, which is quite rare in the literature. This enables one to get a better understanding of the underlying structure of the firms reported transparency level as well as how different recommendations may be classified into distinct sections. This approach may guide code drafters in a systematic way thereby improving the quality of firm's transparency communication.

This article demonstrates that the current classification of the Danish stakeholder recommendations needs to be revisited. This article has demonstrated a way in which this can be done in the future. This implies that one needs to build on a multidisciplinary approach that combines institutional/legal insight with multivariate statistics. The latter discipline involves a whole range of different methods, but this article has shown that; principal, factor as well as cluster analysis may be used as building blocks for such an analysis.

Transparency is a necessary precondition for creating trust among outside investors and top management, as the presence of asymmetric information may create agency costs. When investors get a clearer picture of firms corporate governance structure, in particular how a firm deals with its key stakeholders, they are more inclined to believe that management serves the interests of the company. However, too many specific recommendations may create a false sense of trust, as there is a risk that the board of directors may view the process as a "tick the box" exercise. The consequence is that stakeholder transparency is not taken seriously enough but instead appears as "empty words". As a result, outside investors need to have a clear picture of how a firm complies with the specific recommendations as well as how the recommendations are implemented in practice. If corporate governance is to be applied in a sound manner creating added value for all parties, it is crucial that investors feel that the recommendations are classified in a meaningful way. This article has presented a systemic methodology for this task which can be generalized to other countries.

The future research implications of the articles findings as well as methodology are twofold. First, it seems likely that the outlined methodology can be successfully used in order to quantify the degree of corporate governance compliance. This entails that we will get a more reliable picture of the compliance level and that this knowledge can be compared across countries. Secondly, in order to better understand the mechanisms and nature of transparency, this article has shown that cluster analysis may a fruitful methodology, which may be used more frequently than standard regression models. One the other hand, one should also acknowledge that there are some research limitations. It may be difficult to compare across countries with different jurisdictions and institutions. To illustrate, the shareholder value doctrine is well recognized in the US, whereas in continental Europe, there is a broader acceptance that listed firms should also take into account the interests of other stakeholders than the owners

The findings of the article also have managerial implications. The knowledge of what is considered best practice in relation to transparency and stakeholder communication is vital when a firm wants to enter into a dialogue with all its stakeholders. To illustrate, 15 % of the firms in the article's sample explain poorly their stakeholder policy. As a consequence, it will become more difficult to communicate and create relations with stakeholders due to the absence of a clear and trustworthy stakeholder communication. This is especially the case if a firm explains poorly in relation to its CSR policy.

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