Financial Ratio Disclosure of Non-Financial Firms: Empirical Evidence from FTSE 100

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ABSTRACT

This study investigates the disclosures of financial ratios of FTSE100 non-financial companies and the determinants of these disclosures. Among the determinants of the disclosure level, industry type has been found to be the major determinant. This study recommends further investigation to find other variables that may have an effect on financial ratio disclosure level and recommends the regulator to impose a standardised set of financial ratios to be mandatorily disclosed by companies in their annual reports.

Key words: Voluntary disclosure, financial ratios, annual report

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Introduction

Disclosures in the company's annual reports can be either voluntary or mandatory. Voluntary disclosure is any disclosure in excess of that required by accounting standards, stock exchange listing requirement regulations or laws (Watson *et al.*, 2002) and it is beneficial for stakeholders since it helps in their decision-making process (Fung *et al.,*2007). Voluntary disclosure is also beneficial to companies as it helps to maximize long term value by attracting best investment level from capital providers (Kumar *et al.,* 2012). The disclosures can be found in various parts of annual report and cover both non-financial and financial information including the disclosure of financial ratios.

Financial ratios are one of the most useful tools for annual reports' users especially in assisting their decision-making. The analysis of financial ratios can help to detect impending financial difficulties (Soyode and Bande, 2016) and also assess the success of a company's operations (Petroska-Angelovska and Ackovska, 2016). Therefore, annual report users demand for more disclosure of financial ratios in the annual reports (Financial Reporting Council, 2017). However, financial ratios have been subjected to a controversy debate because of its importance for disclosing companies, on one hand, and the users; on the other. Therefore, our study focuses on voluntary disclosure of financial ratios in the companies' annual report.

Although disclosure of financial ratios is useful, it remains a voluntary disclosure rather than mandatory. In the UK, the only mandatory disclosure of financial ratio is earning per share (EPS), including both basic and diluted EPS as required in IAS 33, with no further financial ratio requirement in any other accounting standard applied in the UK (IASPlus, 2018). Furthermore, neither the listing rules nor companies' act in the UK requires the disclosure of other financial ratios. Hence, companies are selective in their disclosure of financial ratios, as was confirmed by Mankin et al. (2017). This indicates that companies are able to deceive the annual reports' users by disclosing financial ratios only when the results are satisfactory. This issue can be boosted by the fact that most current scandals have raised the suspicion about the fairness of disclosures (Kolsi, 2012).

As a result, a specific study should be conducted on UK companies to understand their behaviour regarding the disclosure of financial ratios. This can be done through examining the determinants of the level of financial ratios disclosure. Although there is a relatively similar previous study conducted in the UK by Watson *et al.* (2002), this study used a sample of UK companies for the period of 1989-1993 and hence their results are considered out of date which cannot be used as a base of a subsequent study especially the companies' voluntary disclosure behaviour has been changing over the years (Financial Reporting Council, 2017). This study could be considered as an update for Watson *et al.* (2002), albeit with some amendments on the sample selection and variables' measurement criteria. Other reasons support revisiting of the voluntary disclosures of financial ratios in the UK will be discussed further in literature review.

The main aim of this study is to investigate FTSE100 non-financial UK companies' behaviour regarding the voluntary disclosure of financial ratios. To achieve this main aim, the following research objectives have been formulated:

- To examine the level of voluntary disclosures of financial ratios in FTSE 100 non-financial UK companies.
- To investigate the association between the level of voluntary disclosures of financial ratios and the key financial indicators.
- To assess the impact of industry types on the level of voluntary disclosures.

The remaining of this paper is structured as follows: the next section provides a review of previous studies and identifies the research gap for this study, this is followed by the research methodology which embraces an objectives-driven research design. The subsequent section covers the presentation of research findings and the discussion of results. The final section draws a conclusion of the study and recommends for further study.

Literature Review

Determinants of voluntary disclosures

Meek et al. (1995) found that voluntary disclosure is needed by investors to protect their interest and enhance their trust in the security market. However, both International Accounting Standards Board (IASB) and Financial Accounting Standard Board (FASB) had no constraint on voluntary disclosures in annual reports. As a result, companies disclose voluntary information in their annual reports differently and hence a different level of voluntary disclosure (Raffournier, 1995 and McChlery et al., 2015). This makes the determinants of companies' voluntary disclosure a topical research area. Kolsi (2012) investigated the determinants of voluntary disclosure using a sample of 52 companies listed on Tunisia stock exchange and it was found that neither the company structure nor size affect the level of voluntary disclosure. However, leverage, profitability, audit quality and industry type have found to be positively associated with the level of voluntary disclosure. The study contradicts with Varghese (2011) in which the company size was found to be significant in determining the level of voluntary disclosure of Indian companies.

Although it can be argued country specific factors contribute to the difference between the above findings, UK companies actually demonstrate the differences in the determinants too. In the context of UK, the determinants of voluntary social disclosure (Brammer & Pavelin, 2004) are different from the determinants of voluntary environmental disclosure (Brammer & Pavelin, 2006). This indicates that different factors determining different aspects of voluntary disclosure, e.g. social vs. environmental. This justifies the rationale of our study that the focus is only on one aspect of voluntary disclosure, i.e. the disclosure of financial ratios. Despite the different aspects of voluntary disclosure, size has been found to positively associate with the level of voluntary disclosure (Brammer & Pavelin, 2004; Brammer & Pavelin, 2006; McChlery et al., 2015) but the impact of other factors such as leverage and profitability remain inconclusive.

Voluntary disclosure of financial ratios

Aripin *et al.* (2011) stated that companies do not necessarily include financial ratios in their annual reports and even if they do, the level of financial ratio disclosure differs from one company to another. The same conclusion led Mankin *et al.* (2017) to demand standards setters and regulators to include a requirement for a standardised set of financial ratios to be disclosed in annual reports. This raises the need to investigate the factors determining the level of financial ratio disclosure. A few studies were carried out to investigate the determinants of financial ratio disclosure of companies from different parts of the world such as UK (Watson et al, 2002), Malaysia (Abdullah and Ku Nor Izah Ku, 2008),

Australia (Taylor and Tower, 2011; Airpin et al, 2011), Turkey (Uyar and Kılıç, 2012), India (Bahatia and Dhamija, 2015) and Ghena (Agyei-Mensah, 2015). These country-specific previous studies found mixed results when examining the impact of size, profitability, leverage, liquidity and efficiency on the level of financial ratio disclosure. As the companies' disclosure behaviour is constantly changing (Financial reporting council, 2017), it is not surprised that there is inconsistency in findings as the research were carried out during different period of time. Therefore, it is expected that the findings of our study will be consistent with previous studies only to a certain extent.

Watson *et al.* (2002) was the only UK based study that investigated the determinants of the financial ratio disclosure and they recommended a more specific study to investigate the determinants of the level of financial ratio disclosure. In respond to their recommendations and build on to this research area, our study focus on the level of financial ratio disclosure but the two studies are different: firstly, Watson *et al.* (2002) conducted the research during the period of 1989 – 1993 whereas our study's time frame is 2018; and, secondly, Watson *et al.* (2002) used a random sample of 313 companies chosen from the 1993 Times UK's 1000 list including both listed and unlisted companies whereas our study focus on all non-financial companies from FTSE100. Aripin *et al.* (2011) and Uyar and Kılıç (2012) found that the determinant of different financial ratio categories are varies. This raises the need for a more in-depth study for the determinant of each financial ratio category and in responds to this, our study investigates the determinants of financial ratio disclosure by ratio groups.

Theoretical framework

Companies' behaviour in financial ratio disclosure is underpinned by either signalling theory or agency theory, or both. Signalling theory suggests that companies aims to inform all capital market operators, especially investors and creditors, about the managers' contributions such as the financing of new projects, the distribution of dividends and the entity's debt policy (Gomoi & Pantea, 2016). Therefore, a company's leverage and financial performance can be considered as signals that would affect the information to be published in the annual reports. Previous study found that managers tend to provide good news about their profitability and this disclosure motive can be explained by signalling theory (Inchausti, 1997). Due to the conflict of interest between mangers (the agent) and investors (the principle), agency theory focuses on the notion of agency cost when trying to explain the voluntary disclosure. Therefore, it was argued that agency cost should be handled by managers who aims at reducing agency cost through disclosing more voluntary information (Jensen and Meckling, 1976). Inchausti (1997) found that managers tend to obtain personal advantages by using external information and hence tend to disclose more information, this disclosure motive relates to the concept of agency theory.

Company size

Previous studies found that company size has a positive significant relationship with the level of voluntary disclosure (Raffournier, 1995; Brammer & Pavelin, 2004; Brammer & Pavelin, 2006; Varghese, 2011 and McChlery *et al.*, 2015) including the voluntary disclosure of financial ratios (Watson *et al.*, 2002; Abdullah and Ku Nor Izah Ku, 2008 and Bhatia and Dhamija, 2015). Thus, we propose:

H_1: there is an association between the company's size and its level of voluntary financial ratio disclosure.

H_0: there is no association between the company's size and its level of voluntary financial ratio disclosure.

Industry sector

Agency theory suggests that companies that belong to the highly regulated industry sectors tend to reduce the agency cost by disclosing more information (Jensen and Meckling, 1976). Based on signalling theory, the disclosure of certain financial ratio may be a sign of the companies' compliance with the industry's best practice (Gomoi & Pantea, 2016). The impact of industry type on the companies' disclosure level can be evidenced from previous studies. Watson *et al.* (2002) found that UK media and utility industries tend to disclose low levels of financial ratios while Abdullah and Ku Nor Izah Ku (2008) found that plantation sector in Malaysia have a higher level of financial ratio disclosure. Hence, we propose:

H_2: there is an association between the industry sector and level of voluntary financial ratio disclosure.

H_0: there is no association between the industry sector and level of voluntary financial ratio disclosure.

Profitability

Varghese (2011) and Kolsi (2012) found positive relationship between the profitability and the level of voluntary disclosure but other studies disagree. For example, Taylor & Tower (2011) and Bhatia & Dhamija (2015) found an insignificant relationship between profitability while Watson *et al.* (2002) found different results for this relationship among the research period. Hence, we propose:

H_3: there is an association between the company's profitability and the level of voluntary financial ratio disclosure.

H_0: there is no association between the company's profitability and the level of voluntary financial ratio disclosure.

Liquidity

Agency and signalling theories contradict each other in explaining the nature of the relationship between liquidity and the level of financial ratio disclosure. According to Abdullah and Ku Nor Izah Ku (2008), agency theory suggests a negative association between the two as the lower the company's liquidity, the higher agency cost would be. On the contrary, signalling theory assumes a positive association between the two since liquidity ratio predicts the company's ability to pay its short-term obligations. Therefore, a high liquidity ratio means that a company is in a secured financial position which would motivate managers to disclose financial ratios to signal this feature (Gomoi & Pantea, 2016). Previous studies also record a mixed results in relation to this association. Watson *et al.* (2002) and Bhatia and Dhamija (2015) found that liquidity is insignificant in determining the level of financial ratio disclosure. Abdullah and Ku Nor Izah Ku (2008), however, found a positive relationship between the two. Therefore, we propose:

H_4: there is an association between liquidity and the level of voluntary financial ratio disclosure.

H_0: there is no association between liquidity and the level of voluntary financial ratio disclosure.

Leverage

Jensen and Meckling (1976) claimed that debt contract incurs costs in orders to constrain management behaviour and managers tend to disclose more voluntary information to reduce these costs. However, the same theory assumes a negative relationship between these two variables in case the leverage was too high since management would fear unfavourable forecasts (Watson *et al.,* 2002). Signalling theory holds a different explanation as it assumes that when managers are confident about the company's future, they tend to maintain a high leverage and hence a higher level of disclosure. Previous empirical findings were also inconclusive. Watson *et al.* (2002) found that the association varies among the years in UK companies while Abdullah & Ku Nor Izah Ku (2008) and Bhatia & Dhamija (2015) did not find any significant association. Thus, we propose:

H_5: there is an association between leverage and level of voluntary financial ratio disclosure.

H_0: there is no association between leverage and level of voluntary financial ratio disclosure.

Efficiency

Signalling theory suggests that companies disclose more information to signal itself from those inefficient companies (Gomoi & Pantea, 2016). Bhatia & Dhamija (2015) found a positive association between efficiency and the level of financial ratio disclosure. This is inconsistent with both Watson *et al.* (2002) and Abdullah & Ku Nor Izah Ku (2008) as they have found an insignificant association between the two. Therefore, we propose:

H_6: there is an association between efficiency and the level of voluntary financial ratio disclosure.

H_0: there is an association between efficiency and the level of voluntary financial ratio disclosure.

Research gap

The review of previous studies shed light on the voluntary disclosure especially the disclosure of financial ratio. Although many research examined the determinants of voluntary disclosure, the determinants of the level of voluntary financial ratios disclosure are currently understudied. Therefore, we aim at filling the research gap by studying the voluntary disclosure of financial ratios, with special attention given to its financial and non-financial determinants.

Research Methodology

Sample selection

As previous research concluded that size is a major determinant of the companies' voluntary disclosure level, specifically the financial ratio disclosure, (e.g. McChlery *et al.*, 2015 and Watson *et al.,* 2002), only large companies will be included in this study. Different measures have been used to determine company size, for example, turnover and market capitalisation. Moreover, unlisted companies generally do not tend to disclose voluntary information (Buzby, 1975 and McChlery *et al.*, 2015) and hence merely large listed companies are included in this study, as adopted by Bhatia & Dhamija (2015). As the FTSE100 index includes the largest 100 UK listed companies on LSE, given that size is measured by market capitalisation, the samples are constituents of FTSE100. Owing to different reporting and ratio disclosure requirements, 21 financial companies have been excluded and hence the sample consist of 79 non-financial FTSE100 companies. FTSE100 index classifies these companies into twenty-six industry sectors but this classification would not be valid in the regression analysis due to the use of dummy variables in the regression. Therefore, industry classification has been narrowed down to only 5 industry sectors as used by Watson *et al.* (2002) since both studies are conducted on UK companies. These 5 industry sectors are: mineral extraction, utility, manufacturing, consumer goods and services.

Data collection

Financial data is collected for the purpose of calculating the independent variables used in the hypotheses: market capitalisation, operating profit, turnover, current assets, current liabilities, total debt, total equity and total assets. Although the data are available from the companies' annual reports, FAME financial database was chosen as the main data source. This is because FAME financial database applies the same treatment in the calculation of financial data for all companies and this consistency helps to enhance comparability of the results.

The disclosed financial ratios, i.e. the dependent variables, were collected through content analysis of the companies' most recent annual report. The mandatory disclosed earning per share ratio (EPS) was excluded as this research mainly focuses on voluntary financial ratio disclosures. Furthermore, financial ratios related to companies' financial subsidiaries were excluded as this research studies the disclosure behaviour of non-financial companies. Examples of affected companies include Tesco, Marks & Spencer and Sainsbury as they have a subsidiary financial institution and hence the additional financial ratios disclosed for their subsidiaries' financial activities were not collected. Finally, financial ratios that were disclosed by one company will be excluded, as it is less appropriate to conclude that

the remaining 78 company's lack of best disclosure practice due to one single company's exceptional disclosed financial ratios. As a result, 15 financial ratios have been excluded from this study as summarized in Table 3.1 below.

Table 3.1. Excluded Financial Ratios

Excluded Financial Ratios	Reasons
Earning per share and diluted earning per share	mandatary disclosure
Group proved reserves replacement ratio	only disclosed by one company
Gross debt ratio	only disclosed by one company
Net debt to market capitalisation	only disclosed by one company
Average cash to cash days	only disclosed by one company
Retained cash flow/net debt	only disclosed by one company
Value added per share	only disclosed by one company
Free cash flow cover	only disclosed by one company
Underlying earning: owner equity	only disclosed by one company
Equity/total assets	only disclosed by one company
Equity/fixed assets	only disclosed by one company
Equity/non-current assets	only disclosed by one company
Equity+non-current liability/fixed assets	only disclosed by one company
Equity+non-current liability/total assets	only disclosed by one company
Financial activities ratios	exclusive to financial institutions

Independent variables

Six research hypotheses are developed based on the literature review and they will be tested using a multivariable regression analysis. Variables for company size, industry sectors, profitability, liquidity, leverage and efficiency are as follows:

- Company size will be measured by the natural logarithm of the total market capitalization since it was used by several studies (i.e. Bhatia and Dhamija, 2015).
- Industry sectors would be represented by a dichotomous variable. Each variable would be assigned a value of one or zero based on the company's sector classification. A value of one would be given to the variable that represent the company's industry sector, otherwise a value of zero would be given.
- Profitability will be measured by operating profit margin as used by Watson *et al.* (2002) and Abdullah and Ku Nor Izah Ku (2008).
- Liquidity will be measured by the ratio of current assets to current liabilities which is consistent with Watson *et al.* (2002) and Abdullah & Ku Nor Izah Ku (2008).
- Leverage will be measured by total debt to total equity ratio in constant with Watson *et al.* (2002), Abdullah & Ku Nor Izah Ku (2008) and Bhatia & Dhamija (2015).
- Efficiency will be measured by assets turnover ratio in consistent with Bhatia & Dhamija (2015), as their result of this association was a manifestation of one of the theories adopted, i.e. signalling theory.

Dependent variables

Dependent variables consist of the financial ratios disclosure scores. Weightings are assigned for the collected financial ratios. Although different annual report users would place different degree of importance for each financial ratio, this study does not assess from a specific stakeholder's perspective and hence all financial ratios were assigned an equal weight. As guided by Bhatia and Dhamija (2015), each financial ratio was assigned a value of one if disclosed in annual reports and a value of zero otherwise. These values were then used to calculate the overall financial ratio disclosure score (FRDS) for each company (Equation 1).

Equation 1:

$$Financial\ Ratio\ Disclosure\ Score\ (FRDS) = \frac{The\ sum\ of\ a\ company's\ ratios'\ values}{Maximum\ sum\ of\ ratios\ values\ for\ a\ sampled\ company}$$

For the classification of financial ratios, this study follows Aripin *et al.* (2011) in which they classified the financial ratios disclosed in Australian's companies' annual report into five sub-categories: the share market measures ratios (investor ratios), capital structure ratios, profitability ratios, liquidity ratios, and cash flow ratios. These sub-categories will be included in the index if they were disclosed by at least two UK companies and their disclosure score is calculated using the equations below:

Equation 2:

$$Share\ market\ measure\ ratios\ disclosure\ score\ (SMMDS) = \frac{The\ sum\ of\ a\ company's\ share\ market\ measure\ ratios'\ values}{Maximum\ sum\ of\ share\ market\ measure\ ratios\ values\ for\ a\ sampled\ company}$$

Equation 3:

$$Profitability\ ratios\ disclosure\ score\ (PRODS) = \frac{The\ sum\ of\ a\ company's\ profitability\ ratios'\ values}{Maximum\ sum\ of\ profitability\ ratios\ values\ for\ a\ sampled\ company}$$

Equation 4:

$$Capital\ structure\ ratios\ disclosure\ score\ (CSDS) = \frac{The\ sum\ of\ a\ company's\ profitability\ ratios'\ values}{Maximum\ sum\ of\ profitability\ ratios\ values\ for\ a\ sampled\ company}$$

Equation 5:

$$Liquidity\ ratios\ disclosure\ score\ (LIQDS) = \frac{The\ sum\ of\ a\ company's\ liquidity\ ratios'\ values}{Maximum\ sum\ of\ liquidity\ ratios\ values\ for\ a\ sampled\ company}$$

Equation 6:

$$Cash\ flow\ ratios\ disclosure\ score\ (CFDS) = \frac{The\ sum\ of\ a\ company's\ cash\ flow\ ratios'\ values}{Maximum\ sum\ of\ cash\ flow\ ratios\ values\ for\ a\ sampled\ company}$$

Data analysis

The scores obtained from the above equations were used as inputs for the statistical analysis in hypothesis testing. The statistical analysis used in this study includes univariate analysis and multivariable regression analysis. Each hypothesis examines the relationship between an independent variable (i.e. company size, leverage, profitability, liquidity, efficiency and industry sector) and the six dependent variables (FRDS, SMMDS, PRODS, CSDS, LIQDS and CFDS). Thus, the statistical analysis will be repeated six times, albeit each time with a different independent variable, as conducted by Uyar and Kılıç (2012) and Aripin *et al.* (2011). Consequently, six models are expected for the statistical analysis, which are:

Equation 7:

$$Y_{FRDS} = \alpha + \beta_1 X_{size} + \beta_2 X_{prof} + \beta_3 X_{liq} + \beta_4 X_{eff} + \beta_5 X_{lev} + \Sigma \beta_j X_j + \epsilon$$

Equation 8:

$$Y_{SMMDS} = \alpha + \beta_1 X_{size} + \beta_2 X_{prof} + \beta_3 X_{liq} + \beta_4 X_{eff} + \beta_5 X_{lev} + \Sigma \beta_j X_j + \epsilon$$

Equation 9:

$$Y_{CSDS} = \alpha + \beta_1 X_{size} + \beta_2 X_{prof} + \beta_3 X_{liq} + \beta_4 X_{eff} + \beta_5 X_{lev} + \Sigma \beta_j X_j + \epsilon$$

Equation 10:

$$Y_{PRODS} = \alpha + \beta_1 X_{size} + \beta_2 X_{prof} + \beta_3 X_{liq} + \beta_4 X_{eff} + \beta_5 X_{lev} + \Sigma \beta_j X_j + \epsilon$$

Equation 11:

$$Y_{LIQDS} = \alpha + \beta_1 X_{size} + \beta_2 X_{prof} + \beta_3 X_{liq} + \beta_4 X_{eff} + \beta_5 X_{lev} + \Sigma \beta_j X_j + \epsilon$$

Equation 12:

$$Y_{CFDS} = \alpha + \beta_1 X_{size} + \beta_2 X_{prof} + \beta_3 X_{liq} + \beta_4 X_{eff} + \beta_5 X_{lev} + \Sigma \beta_j X_j + \epsilon$$

Description for the variables used in the above equation can be found in Table 3.2 below.

Table 3.2: Description of Statistical Variables

Symbol	Variable description
Y_{FRDS}	Financial ratio disclosure score
Y_{SMMDS}	Share market measure ratio disclosure score
Y_{CSDS}	Capital structure ratio disclosure score
Y_{PRDS}	Profitability ratio disclosure score
Y_{LIQDS}	Liquidity ratio disclosure score
Y_{CFDS}	Cash flow disclosure ratio score
α	The minimum autonomous value of Y , that is not affected by the change in other variables' value
β	Coefficient : a measure of how significant is the association between the dependent and independent variables
X_{size}	Natural log of the company's market capitalisation
X_{prof}	Operating profit margin = operating profit/turnover
X_{liq}	Current ratio = current assets/current liabilities
X_{eff}	Turnover to assets ratio = turnover/assets
X_{lev}	Debt to equity ratio = total debt/total equity
X_j	Five dchotomous variables representing five industry sectors (X_{cg}= consumer goods, X_{me}= miniral extraction, X_m= Manufacturing, X_s= Services, X_u= utility).
ϵ	Error = the difference between the actual dependent variable's value and its value that resulted from the statistical model

Validity

The assumptions of the standard linear regression model were subject to test in order to enhance its validity. These assumptions include: (1) Non-existence of influential cases assumption will be tested on SPSS using Cook's Distance. If Cook's Distance > 1, then this is considered as an influential case and should be excluded from the study. (2) Linearity between each independent variable and the dependent variable will be tested using scatter plots. If the variables do not demonstrate a linear relationship, they were excluded from the regression model (Field, 2013). The Pearson correlation coefficient (r) were also used to verify the nonlinear relationship between variables, as an (r) value that is near zero indicate a weak linear correlation (Dorestani & Aliabadi, 2017). (3) Multicollinearity was tested using Pearson correlation as it is relevant for testing the correlation between variables that are intervals or ratios, which is consistent with this research variables nature and it has been used in previous studies (Taylor & Tower, 2011; Bhatia and Dhamija, 2015). In addition, Variance Inflation Factor (VIF) was used to detect the multicollinearity and verify Pearson correlation results (Howitt & Cramer, 2011). If Pearson correlation > 0.7 or < -0.7, and if VIF > 10 (tolerance < 0.1), one of the highly correlated variables was removed. (4) Autocorrelation was also tested using Durbin-Watson statistic. If Durbin-Watson was between 1.5 and 2.5, the independence of residuals assumption is met (Agyei-Mensah, 2015). Furthermore, the validity of categorical variables was tested using a frequency table. Each count related to the categorical variable should not have a frequency percentage less than 15%

in order to be valid (Field, 2013). To enhance the reliability and validity of the results, data collection is conducted by the main researcher and then verified by another researcher.

Hypotheses testing

All hypotheses were tested using multivariate regression analysis - the Standard Multiple Linear Regression (SMLR) as used in similar previous studies (Abdullah and Ku Nor Izah Ku, 2008); Aripin et al., 2011; Agyei-Mensah, 2015 and Bhatia and Dhamija, 2015). Moreover, the model significance will be analysed by examining R-square value and F-sig. to assess the model fit and the ability of the independent variables to explain the variant in the dependent variable; and consequently, the ability to generalise the results. However, a model significance is not considered the main aim of the standard regression used, as Howitt & Cramer (2011) stated that SMLR is not concerned with building models but with identifying the set of predictors which independently predict the dependent variable significantly and allow an effective prediction of scores in that variable. This means that an insignificant model does not necessarily mean an insignificant association among the variables, but it may affect the generalisability of results.

Limitations

Although this research is made with great effort but, as any other research, some limitations exist in the research design owing to the sample selection and data collection. As the sample consists of only the 79 non-financial institution listed on LSE, it limits the generalisation of results to UK financial institutions and non-financial companies outside UK. The data collected based solely on the financial ratios disclosed on the companies' annual reports but no other published source of data such as company's websites.

Findings and Discussion

Descriptive Statistics

Disclosure of financial ratios

The maximum number of financial ratios disclosed in a company's annual report is 13 while the minimum is 3. Findings also show that each company disclosed 7 financial ratios on average. This is considered a high disclosure average compared with previous studies (Figure 4.1) and also sheds the light on the change in the company's behaviour regarding financial ratio disclosure among these years (Financial reporting council (FRC), 2017).

Figure 4.1: Comparison of Disclosure Average

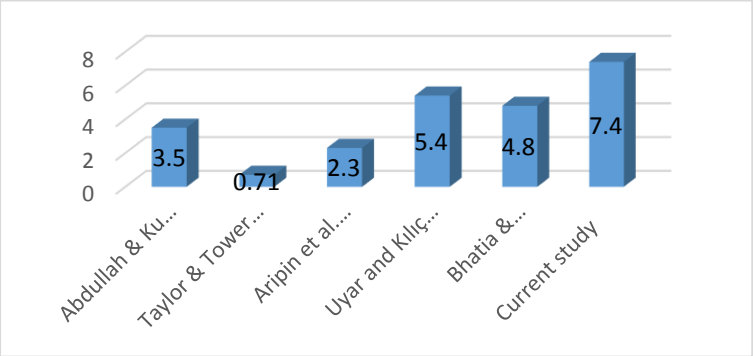
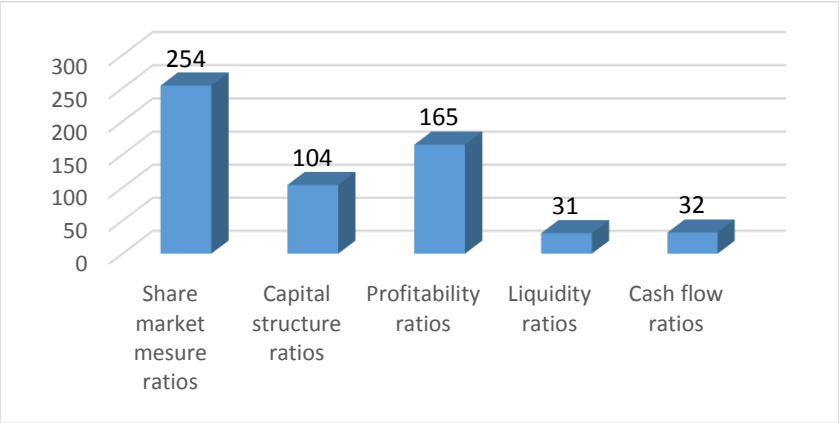


Table 4.1: Overview of findings

No. of financial ratios disclosed	FRDS	Frequency	percentage
0	0	0	0.0%
1	0	0	0.0%
2	0	0	0.0%
3	0.231	2	2.5%
4	0.308	9	11.4%
5	0.385	8	10.1%
6	0.462	9	11.4%
7	0.538	14	17.7%
8	0.615	9	11.4%
9	0.692	11	13.9%
10	0.769	11	13.9%
11	0.846	3	3.8%
12	0.923	1	1.3%
13	1	2	2.5%
Total		79	1

The most disclosed financial ratios are share market measure ratios (investor ratios) with 254 ratios disclosed in the annual reports (Figure 4.2). This is expected given that the present and potential investors are the primary users of financial reports according to the conceptual framework for financial reporting (*IASPlus*, 2018). Consequently, companies are encouraged to disclose more of share market measure ratios as they are of high importance to investors.

Figure 4.2: Voluntary disclosed financial ratios by categories



Disclosure of share market measure ratios

This sub-category is the most disclosed ratios in companies' annual reports. 100% of the samples disclose share market measure ratios with 78% of the samples disclose at least 3 share market measure ratios (Table 4.2). SMMDS values range from 0.167 to 1. On average, companies disclose 3 share market measure ratios and this is higher than Aripin *et al.* (2011). Among industries, consumer goods industry is found to have disclosed the higher level of share market measure ratios.

Table 4.2: Disclosure of share market measure ratio category

No. of share market measure ratios disclosed	SMMDS	Frequency	percentage
No disclosure	0.000	0	0
1	0.167	1	1.27%
2	0.333	16	20.25%
3	0.500	35	44.30%
4	0.667	20	25.32%
5	0.833	6	7.59%
6	1	1	1.27%
Total		79	1

The most disclosed ratio is total shareholder return ratio (Table 4.3) and this is consistent with Aripin *et al.* (2011). Most companies disclose shareholder return ratio on the remuneration report because it is used as a remuneration target and as companies are obliged to exhibit their remuneration plan, it is not surprised to have a high level of voluntary disclosure of shareholder return ratio.

Table 4.3: Disclosure of share market measure ratios – by individual ratio

Share market measure ratios	Frequency	Percentage
Total shareholder return	78	98.73%
Assets per share	4	5.06%
Dividend cover ratio	26	32.91%
Dividend payout (div/earning per share)	13	16.46%
Dividend yield (div/ price per share)	45	56.96%
Dividend per share	74	93.67%
Market capitalisation	14	17.72%

Disclosure of profitability ratios

Profitability ratios represent the second most disclosed ratio category. 28% of all the ratios disclosed in the companies' annual reports belongs to this category. 95% of the companies disclose at least 1 profitability ratios (Table 4.4). Companies on average disclose 2 profitability ratios and the average is higher than findings from Aripin *et al.* (2011). This group consists of 10 sub- ratios and the most frequently disclosed ratio is operating profit margin, followed by return on capital employed (Table 4.6). Furthermore, manufacturing industry has the highest level of disclosure.

Table 4.4: Disclosure of profitability ratio category

No. of profitability ratios disclosed	PROFDS	Frequency	percentage
No disclosure	0.000	4	5.06%
1	0.200	23	29.11%
2	0.400	26	32.91%
3	0.600	15	18.99%
4	0.800	10	12.66%
5	1	1	1.27%
Total		79	

Table 4.5: Disclosure of share market measure ratios – by individual ratio

Profitability ratios	Frequency	Percentage
Return on invested capital	17	21.52%
Return on equity	8	10.13%
Return on capital empolyed	28	35.44%
Return on investment	3	3.80%
EBITDA margin	23	29.11%
Gross profit margin	13	16.46%
Expense as a percentage of revenue	15	18.99%
Return on assets	3	3.80%
Net profit margin	6	7.59%
Operating profit margin (EBIT margin)	49	62.03%

Disclosure of capital structure ratios

22.78% of the companies do not disclose any capital structure ratios while the remaining companies disclose between 1 to 4 ratios each (Table 4.6). The most disclosed ratio is leverage ratio (Table 4.7). On average, each company discloses only 1 capital structure ratio and is considered as the least disclosed ratio category as compared with other financial ratio categories. Findings also indicate that consumer goods industry discloses less capital structure ratios as compared with other industries.

Table 4.6: Disclosure of capital structure ratio category

No. of capital structure ratios disclosed	CSDS	Frequency	percentage
No disclosure	0.000	18	22.78%
1	0.250	33	41.77%
2	0.500	16	20.25%
3	0.750	9	11.39%
4	1.000	3	3.80%
Total		79	1

Table 4.7: Disclosure of capital structure ratios – by individual ratio

Capital structure ratios	Frequency	Percentage
Gearing (debt / debt + equity)	19	24.05%
Times interest earned (EBIT/interest exp) (interest cover)	27	34.18%
Fixed charges coverage ratio	7	8.86%
Total debt to equity	2	2.53%
Leverage (Net debt/EBITDA ratio) or (FFO/net debt)	46	58.23%
Equity ratio (equity/ assets)	3	3.80%

Disclosure of liquidity ratios

This is the least disclosed ratio category. Only 29% of the companies disclose liquidity ratios with 2 ratios the most (Table 4.8). Four types of liquidity ratios are found in the annual reports and the average payment period is the most disclosed ratio (Table 4.9). This is inconsistent with Aripin *et al*. (2011) and Uyar & Kılıç (2012), as both studies found companies do not disclose average payment period at all.

Table 4.8: Disclosure of liquidity ratio category

No. of Liquidity ratios disclosed	LIQDS	Frequency	percentage
No disclosure	0.000	56	71%
1	0.500	15	18.99%
2	1.000	8	10.13%
Total		79	

Table 4.9: Disclosure of liquidity ratios – by individual ratio

Liquidity ratios	Frequency	Percentage
Average settlement period for trade payables (payment period)	10	0.127
Average settlement period for trade recievables (collection period)	8	0.101
Working capital as a percentage of sales (working capital turnover) (return on working capital) (return on operating capital)	8	0.101
Days to wirking capital	5	0.063

Disclosure of cash flow ratios

Generally, cash flows ratios are not widely disclosed in annual reports. Only 31 companies disclose cash flow ratios and only one company disclosed two cash flow ratios while the remaining disclose only one cash flow ratio (Table 4.10). Three types of cash flow ratios are found and the operating cash flow conversion ratio is the most disclosed ratio (Table 4.11). Findings also show that cash flow ratios are mostly disclosed in service industry.

Table 4.10: Disclosure of cash flow ratio category

No. of cash flow ratios disclosed	CFDS	Frequency	percentage
No disclosure	0.000	48	61%
1	0.500	30	37.97%
2	1.000	1	1.27%
Total		79	

Table 4.11: Disclosure of liquidity ratios – by individual ratio

Cash flow ratios	Frequency	Percentage
Cash flow per share	2	0.025
Operating cash flow conversion ratio (operating cash flow / operating profit)	28	0.354
Cash flow conversion ratio	2	0.025

Statistical Results

Table 4.12 present the outcomes of included independent variables after removal of any influential case of Cook's Distance > 1 and independent variables that fail to meet the regression assumptions.

Table 4.12: Outcomes of Regression Assumptions' Tests

	Independent Variables									
Dependent Variables	Size	Profitability	Liquidity	Leverage	Efficiency	Mineral extraction industry	Utility industry	Manufacturing industry	Consumer goods industry	Services industry
FRDS	Excluded	Excluded	Included	Excluded	Excluded	Excluded	Excluded	Included	Included	Included
SMMDS	Excluded	Included	Excluded	Included	Included	Excluded	Excluded	Included	Included	Included
PRODS	Included	Included	Excluded	Excluded	Included	Excluded	Excluded	Included	Included	Included
CPDS	Excluded	Included	Included	Excluded	Excluded	Excluded	Excluded	Included	Included	Included
LIQDS	Excluded	Included	Excluded	Excluded	Included	Excluded	Excluded	Included	Included	Included
CFDS	Included	Included	Excluded	Excluded	Excluded	Excluded	Excluded	Included	Included	Included

Table 4.13 Summary of Standard Multiple Linear Regression Results

Dependent variable	FRDS	SMMDS	PRODS	CSDS	LIQDS	CFDS
R- square	0.122	0.159	0.261	0.119	0.029	0.199
Adjusted R-square	0.075	0.088	0.199	0.058	-0.039	0.143
F-sig.	0.044**	.050*	.001***	.096*	0.828	.006***
Variables tested	Sig. (P-value)					
Size	-	-	0.226	-	-	0.534
Profitability	-	0.011**	0.529	0.131	0.437	0.078*
Efficiency	-	0.103	0.431	-	0.374	-
Liquidity	0.798	-	-	0.042**	-	-
Leverage	-	0.684	-	-	-	-
Manufacturing industry	0.004***	0.206	000 ***	0.371	0.720	0.007 ***
Consumer goods industry	0.049**	0.032**	0.001***	0.062 *	0.997	0.006***
Services industry	0.022**	0.09*	0.0019 ***	0.248	0.727	0.000***
Coefficients (β)						
Size	-	-	0.134	-	-	-0.070
Profitability	-	0.305	0.068	-0.183	-0.096	0.198
Efficiency	-	-0.187	-0.086	-	0.108	-
Liquidity	-0.031	-	-	-0.259	-	-
Leverage	-	-0.047	-	-	-	-
Manufacturing industry	0.429	0.192	0.676	-0.131	0.055	0.400
Consumer goods industry	0.291	0.328	0.493	-0.287	0.001	0.403
Services industry	0.371	0.267	0.470	-0.187	0.057	0.544

It is found that all three industry sectors are statistically significant in determining the FRDS ($p < 0.05$) with manufacturing industry ($\beta = 0.429$) tend to voluntarily disclose the most financial ratios. However, liquidity has a p-value of $0.798 > 0.05$ indicating a statistically insignificant relationship. As a result, in the context of financial ratios disclosure, Hypothesis H_2 is accepted but Hypothesis H_4 is rejected. Our findings disagree with Watson *et al.* (2002) that utility industry was the only industry with significant association with FRDS and this also reinforce that companies' disclosure behaviour changes over time. Table 4.13 also shows that profitability ($\beta = 0.305$) and consumer goods industry ($\beta = 0.328$) have a significant positive association with SMMDS at $\alpha=0.05$. This indicates that the more profitable the company is the more it discloses share market measure ratios and consumer goods companies tend to disclose the higher level of share market measure ratios. Therefore, both H_2 and H_3 are accepted in the context of share market measure ratios. Findings also show that leverage, efficiency and manufacturing industry are statistically insignificant in determining SMMDS which results in the rejection of H_5 & H_6.

Out findings found that size, profitability and efficiency do not have a significant relationship with PRODS as they have a p-value > 0.05. However, all three industries are significant in determining the PRODS as they had P-values lower < 0.05 with manufacturing industry has a $\beta = 0.676$ followed by consumer goods ($\beta = 0.493$) and services industries ($\beta = 0.470$). The findings do not agree with Aripin et al. (2011) that company's size, profitability and leverage have a significant relationship with the PRODS. For CSDS, only liquidity is found statistically significant in with a $\beta = -0.259$ and this implies that the higher the company's liquidity, the lower that the capital structure ratios disclosure, which leads to the acceptance of H_4.

Manufacturing, consumer goods and services industries are found to have a significant association with the CFDS at $\alpha=0.05$, with services industry showing the strongest positive association with a $\beta = 0.544$ followed by consumer goods ($\beta = 0.403$) and manufacturing ($\beta = 0.400$) industries respectively. This leads to the acceptance of H_2**.** Finally, Table 4.13 also shows that none of the profitability, efficiency and included industries variables have a significant association with LIQDS.

Determinants of financial ratios

Size (H_1) – Our findings lead to the rejection of (H_1) by stating that as we found no significant association between the company's size and the financial ratio disclosure when measured by PRODS and CFDS. This outcome does not support Uyar and Kılıç (2012) and Aripin *et al.* (2011), which proved a significant positive relationship between size and PRODS. As a result, this study also does not support agency theory since this theory assumes that larger companies tend to disclose more ratios (Buzby, 1975).

Industry sector (H_2) - There is a significant association between industry sector and the level of financial ratio disclosure when it was measured by FRDS, SMMDS, PRODS, CSDS or CFDS. As a result, Hypothesis H_2 is accepted. Manufacturing industry is most significant in determining the FRDS and PRODS. This outcome can be explained by signalling theory i.e. manufacturing industry exhibits the higher association with PRODS and hence companies within the industry are expected to have higher level of profitability. This is further justified by the findings from the descriptive statistics that manufacturing companies also have a significant association with profitability.

Profitability (H_3) - Profitability has a positive and statistically significant association with SMMDS at $\alpha = 0.05$ resulting in the acceptance of (H_3): profitability has a significant association with the level of financial ratio disclosure when measured by SMMDS. This positive association can be explained by agency theory as it assumes that managers tend to disclose more ratios when they record high profit to gain compensations and personal advantages (Inchausti, 1997). Given that SMMR are used as targets for remuneration it would be expected for high profitability companies to disclose more of SMMR, as found in this study.

Liquidity (H_4) – Due to the statistically significant negative association between the liquidity and CFDS, we accept of H_4 and state that there is a negative significant association between liquidity and the LFRD disclosure when measured by CFDS. However, liquidity is found insignificant in determining FRDS, which is consistent with Bhatia & Dhamija (2015) and Agyei-Mensah (2015).

Leverage (H_5) - The linearity assumption test results in the exclusion of leverage from all of the six models. Thus, both signalling and agency theory fail to explain the relationship between leverage and the LFRD as they either suggest a positive or negative association.

Efficiency (H_6) – This variable is included in SMMDS, PRODS and LIQDS models but no significant association found, which leads to the rejection of (H_6) by stating that there is no significant association between the company's level of financial efficiency and level of financial ratio disclosure when measured by SMMDS, PRODS and LIQDS. This outcome does not support signalling theory as it assumes a positive association between efficiency and financial ratio disclosure.

Conclusion

Agency and signalling theories have both identified some of the determinants that may affect level of financial ratio disclosure such as size, profitability, leverage, efficiency, liquidity and industry sector. Previous studies investigate the association between these determinants and financial ratio disclosure but with mixed results and hence proposed for research that examines the impact of these determinants. Consequently, this research was conducted. This study also investigates the determinants of each financial ratio category to address Aripin *et al.* (2011)'s concern, when different determinants were found for each financial ratio category.

This study found an average of 7 financial ratio disclosure per company, which was higher than previous research. In addition, SMMR is the most disclosed ratios, with an average disclosure of 6 ratios per company, followed by PRO and CS ratios respectively. However, both CF and LIQ ratios are rarely disclosed. Subramanyam & Wild (2008) suggested that the low disclosure of CF and LIQ ratios is related to the perception that these ratios are less likely to have a direct impact on the firm value.

Industry type is the major determinant of financial ratio disclosure scores because it is found that manufacturing, consumer goods and services industries have a significant association with FRDS, PRODS and CFDS. Consumer goods industry is also a significant determinant of CSDS, and both consumer goods and services industries are significant in determining SMMDS. This is explained by signalling theory as the theory claims that companies disclose ratios that signal its characteristics rather as a respond to government regulation level (Gomoi & Pantea, 2016).

This study found a negative association between liquidity and CSDS and positive association between profitability and both SMMDS & CFDS. These associations were all explained by agency theory as companies with high liquidity would tend to have low disclosure as a response to the high agency costs associated (Abdullah and Ku Nor Izah Ku, 2008). In addition, it assumes that managers of companies with high profitability would tend to disclose additional information to gain personal advantages (Inchausti, 1997).

Based on the findings, it is recommended that the UK listing authority and the FASB should focus on imposing mandatory rules for financial ratio disclosure, e.g. develop a standardised set of ratios to be disclosed across all companies, to retain the main purpose of ratios disclosure of increasing the comparability across companies, given the fact that the different level of ratio disclosures across companies and the overlap between leverage and gearing ratios that was found in UK companies reports present the unstandardized ratios disclosure which lead to a lower comparability.

Due to the limitations of research design, especially the samples used in this study, it is recommended that a wider range of sample, with a balanced composition of industries, should be used to investigate the effect of industry (especially mineral and utility industries) on the level of financial ratio disclosure. Additionally, further studies should also be made to investigate other possible determinants as the explanatory power of the six constructed is low. Further study can also cover a wider disclosure platform such as the companies' publications/press and corporate website.

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