MULTINATIONAL AND DOMESTIC AGROCHEMICAL CORPORATIONS IN INDIA: AN ANALYSIS OF THE STANDARDIZATON OF CORPORATE ENVIRONMENTAL DISCLOSURES

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Abstract

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Multinational corporations operating in developed countries are leaders in corporate environmental disclosure (CED), this often isn't true for subsidiaries operating in developing countries. The majority of CED research that has been conducted focuses primarily on large multinational corporations, leaving a gap of knowledge regarding the subsidiary operations of multinational corporations. This study provides insight into whether or not multinational corporations are implementing comprehensive disclosure practices throughout the entirety of their operations and if reporting practices are more strongly influenced by country of origin or country of operation. Consolidated narrative interrogation (CONI) is used to quantify CEDs presented in annual and stand-alone sustainability reports published between 2002 and 2016 by companies from three categories of corporations. Results show that the corporation category is a significant factor affecting the diversity, quantity and quality of disclosures, indicating a lack of standardization among the reporting practices of the different categories of corporations.

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1. Introduction

1.1 Overview

Corporate environmental disclosures (CEDs) are publications made by corporations that contain environmental information. CEDs have not been popularized for long; most developments in this area have occurred over the last 40 years (Lin, 2008; Setyorini & Ishak, 2012). Furthermore, multinational corporations are known to be leaders in CED publications (KPMG, 2011; Lin, 2008; Park & Ghauri, 2015). Due to this, the majority of CED research that exists has examined multinational corporations operating in developed countries.

The purpose of this study is to analyze the CEDs from three different corporate categories: (1) parent multinationals, (2) Indian subsidiaries of those multinationals, and (3) Indian domestic corporations, over a fifteen-year timeframe. This will address a recognized gap in the literature (Ali *et al*., 2017) and enhance understanding of how corporations in these three categories report. More specifically, this study focuses on agrochemical corporations. The reasons for focusing on corporations in this industry are the environmentally sensitive nature of the industry and the high levels of public scrutiny and expectations that influence environmental behaviour in this industry.

The research aims to: (1) investigate if CED practices are standardized across the three categories of corporations, or how reporting practices differ amongst the categories; and (2) analyze if there has been a change in this trend over time. This will be done by collecting data from the annual reports and stand-alone sustainability reports from multinational parent companies, multinational subsidiary companies, and domestic Indian corporations. Disclosures from all three categories of corporations will be compared on the basis of diversity, quality, and quantity of environmental information disclosed. Diversity is defined as the "content per theme" (Beck *et al.*, 2010, pg. 212). Quality is defined as the level of information provided combined with the depth or detail of the

disclosure (Beck *et al*., 2010, Pg. 213). Quantity is defined as the total volume (Beck *et al*., 2010). The following hypotheses will be tested:

H1a: Each corporation categories studied will increase the diversity of environmental disclosures over the timeframe examined.

H1b: Each corporation categories studied will increase the quantity of environmental disclosures over the timeframe examined.

H1c: Each corporation categories studied will increase the quality of environmental disclosures over the timeframe examined.

H2a: The diversity of environmental disclosures of P-MNCs and I-MNCs will lack standardization, and the environmental disclosures of I-MNCs will be more similar to those of domestic corporations than the P-MNC.

H2b: The quantity of environmental disclosures of P-MNCs and I-MNCs will lack standardization, and the environmental disclosures of I-MNCs will be more similar to those of domestic corporations than the P-MNC.

H2c: The quality of environmental disclosures of P-MNCs and I-MNCs will lack standardization, and the environmental disclosures of I-MNCs will be more similar to those of domestic corporations than the P-MNC.

Data will be collected from the CEDs of twelve different corporations, four from each of the three corporate categories. The three categories are: (1) parent multinational corporations (P-MNC), which are the headquarter operations of a multinational agrochemical corporation, (2) Indian subsidiary corporations (I-MNC), which are the subsidiary corporations of the multinational parent corporation

operating in India, and (3) domestic corporations, which are national corporations that operate in India in the agrochemical industry.

In order to collect data from the CED publications, consolidated narrative interrogation (CONI) will be used, which is a content analysis methodology developed by Beck *et al.* (2010). This methodology is specialized for the analysis of environmental information. Publicly-available reports from each corporation over the period 2002-2016 will provide measurements on the diversity, quantity, and quality of information reported in CEDs.

Following analysis for the changes over time and standardization of reporting practices between the corporations, it is found that all corporations increased the quantity of their disclosures over time and that P-MNC and domestic corporations had significant changes in the diversity of reporting over time. Results also showed that the corporation category was a significant factor affecting the diversity, quantity, and quality of disclosures, indicating that there is a lack of standardization across the reporting practices of the different categories of corporations. The data suggests that, in terms of diversity and quantity, subsidiary corporations conform more to localized reporting practices. The findings on standardization were inconclusive for the analysis of quality.

1.2 Relationship to Earlier Work

This research builds on data collected and analysis by Wilson (2013). By including data collected by Wilson along with the original data collected for this thesis, it was possible to examine reporting trends over a longer period of time than would have otherwise been possible. The data presented in Wilson's (2013) study included the timeframe 2002-2011. This study extends that timeframe to include 2012-2016. When analyzing corporate environmental disclosure for the same sample between 2002 and 2011, Wilson (2013) found that the disclosures of Indian subsidiary companies were localized to Indian norms rather than standardized within the multinational corporation. The focus of this research will be the change in the diversity, quantity, and quality of CEDs over time and will also look at the

standardization of corporate environmental disclosures, which overlaps with Wilson's scope to an extent. Wilson's research used the same companies and methods as the research presented here and also examined the standardization between the three categories of corporations. However, this research focused more extensively on time series analysis. With the extended timeframe, this study analyses the significance of the change in reporting practices over time. The analysis of standardization also accounts for change over time by using a repeated measures ANOVA as opposed to the t-test used by Wilson. Moreover, this study introduces a theoretical framework to support the results. This thesis also updates the literature review from Wilson (2013), which is important given the rapid growth of the literature focused on CEDs.

1.3 Overview of Manuscript

This thesis is presented in a manuscript style, featuring this introductory chapter, along with a manuscript intended for publication composing the body of the thesis. It is anticipated the manuscript will be submitted to the *Journal of Cleaner Production*. Additional details regarding methods and results are published in the appendices at the end of the thesis. Only the core methods and results will be featured in the manuscript.

The authorship of the manuscript will include the thesis author (A. Jessop), thesis supervisors (Dr. M. Bardecki & Dr. C. Searcy) and N. Wilson. As the thesis author, my role in this research was coding CEDs from 2012-2016 for the twelve corporations, combining this with Wilson's data set from 2002-2011, as well as performing a new and separate data analysis (as described above), which I then used to compose the manuscript in the next section.

The purpose and benefit of using a manuscript style thesis is to seamlessly combine the two sets of data into a paper publishable in an international peer-reviewed journal. The analysis and findings based on the combined sets of data are stronger than would have been possible using one of the data sets alone.

2. Multinational and Domestic Agrochemical Corporations in India: An Analysis of the Standardization of Corporate Environmental Disclosures

ABSTRACT

Multinational corporations operating in developed countries are leaders in corporate environmental disclosure (CED), this often is not true for subsidiaries operating in developing countries. The majority of CED research that has been conducted focuses primarily on large multinational corporations, leaving a gap of knowledge regarding the subsidiary operations of multinational corporations. This study provides insight into the extent to which multinational corporations implement comprehensive disclosure practices throughout the entirety of their operations and if reporting practices are more strongly associated with the practice of parent companies or the country of operation. Consolidated narrative interrogation (CONI) is used to quantify CEDs presented in annual and stand-alone sustainability reports published between 2002 and 2016 by agrochemical companies operating in India. Results show that the corporation category is a significant factor affecting the diversity, quantity and quality of disclosure, indicating a lack of standardization among the reporting practices of the different categories of corporations.

Keywords:
Corporate environmental disclosure
Agrochemical industry
India
Subsidiaries
Legitimacy Theory
Domestic

2.1 Introduction

Multinational corporations are leaders in producing corporate environmental disclosures, however, this is often not true for multinational subsidiaries operating in developing countries (KPMG, 2011). Corporate environmental disclosures have been produced by corporations since the 1980s (Lin, 2008; Ingram & Frazier, 1980), and when utilized properly can result in many benefits for corporations and investors (Hu & Karbharl, 2015). Furthermore, benefits of a standardized approach to environmental disclosures within multinational corporations can include better performance targets for subsidiaries, improved policy and auditing for subsidiaries, as well as more comparable information for stakeholders (Christmann, 2004). Standardized disclosure practices can also improve corporate legitimacy, leading to

higher profits, better stock prices, lower pressure from non-government organizations and reduced liability of foreignness (Cho & Patten, 2007; Hunter & Bansal, 2006).

Despite this, the majority of CED research that has been conducted focuses primarily on large multinational corporations, such as the Fortune 500 companies or the top listed corporations in a selected country (Kolk & Pinkse, 2010; KPMG, 2011; Wilson, 2013). Studies examining corporate environmental disclosure of multinationals rarely include subsidiary corporations and studies focused on domestic corporations rarely make a distinction between domestic corporations and foreign-operated multinational subsidiaries (Wilson, 2013).

This research aims to: a) analyze the diversity, quantity and quality of corporate environmental disclosures from domestic corporations, subsidiary corporations and multinational corporations to identify trends over a fifteen-year timeframe, and b) determine if corporate environmental disclosures within the agrochemical industry from the three categories of corporations are standardized. This is being done by collecting data from the annual reports and stand-alone sustainability reports from three categories of corporations: multinational parent companies (P-MNC), multinational subsidiary companies (I-MNC), and domestic Indian corporations. Multinational parent corporations refer to the headquarter operation of a multinational agrochemical corporation, while the multinational subsidiary companies are subsidiary corporations of the same multinational corporation which are operating in India. In addition, domestic corporations will also be examined; these corporations are national publically traded corporations which operate in India in the agrochemical industry.

To achieve this, the content of annual reports and sustainability reports published between the year 2002 and 2016 are quantified using Consolidated Narrative Interrogation (CONI). This comprehensive approach to content analysis measures material on diversity, quantity and quality. The data are analyzed using simple linear regression and two way repeated measures ANOVA.

This research finds that there is a lack of standardization across the reporting practices of the three categories of corporations. Results show that I-MNCs are reporting in a way that is more similar to domestic corporations, suggesting I-MNCs follow a localized reporting strategy. Additionally, the results show that the diversity of CEDs significantly increased for P-MNCs and domestic corporations and that the quantity of CEDs significantly increased for all corporations over the fifteen-year timeframe. The results for CED quality were inconclusive.

These findings are significant in several ways and contribute to academic research and future decision making regarding environmental disclosure policy and regulation. The existing literature focuses primarily on the environmental disclosures of large multinational corporations, with relatively little research addressing the reporting of the subsidiaries of those multinationals. This research is a step towards addressing this gap by producing findings for the primary and subsidiary operations of multinational corporations, as well as domestic corporations. This information is likely to be useful in future policy and regulation decisions around environmental disclosure. Currently, there is an ongoing discussion in many countries regarding the necessity of implementing mandatory environmental disclosure, particularly in the case of large multinational corporations (KPMG, 2017). Understanding how international subsidiary reports compare to multinational corporations and domestic corporations can aid in implementing effective regulation for companies whose operations span multiple countries.

2.2 Literature Review

This literature review will introduce relevant literature on corporate environmental disclosures, environmental regulations in India, the agrochemical industry, and legitimacy theory in order to establish the scope and relevance of this research.

2.2.1 Corporate Environmental Disclosure

Corporate environmental disclosures (CEDs) consist of both mandatory and voluntary reporting of information relating to the environment (Villiers & van Staden, 2011). CEDs developed as a result of increasing stakeholder and public concern regarding the environmental impacts of corporations (Hughes *et al.,* 2001; Sumiani *et al*., 2007). There are several ways in which a corporation can communicate the impact of corporate activities on the environment to stakeholders, including in annual reports, stand-alone sustainability reports, websites and promotional publications (Carreira & Abreu, 2014; Trabelsi *et al.*, 2013; Villiers & van Staden, 2011).

There are several perceived benefits of environmental disclosure, which drive corporations to publicly report. By disclosing, corporations have the opportunity to improve their reputation, which in turn can improve competitive advantage, increase profit margins, attract investors and increase the potential sales market (Hu & Karbharl, 2015). These corporations can also benefit from cost-savings, due to more efficient use of resources and reduced risk of legal actions or public slandering (Hu & Karbharl, 2015). Social and economic factors, such as increased profits and brand recognition, have become significant considerations for corporations regarding voluntary disclosures (Buhr & Freedman, 2001; Sumiani *et al.* 2007; Villiers & van Staden, 2011). Cormier and Magnan (1999) define the phenomenon of information costs, where if a corporation fails to provide credible information on a topic, investors and stakeholders will assume the worst. In fact, disclosing environmental information can impact many aspects of a corporation, which is why corporations tend to employ disclosures as part of a strategic plan (Cormier & Magnan 1999; Villiers & van Staden, 2011).

There are also several reasons why a corporation may opt to not disclose environmental information, including not believing the costs outweigh the benefits, the absence of legislation and regulation, or little interest from investors and stakeholders (Hu & Karbharl, 2015; Stubbs *et al.*, 2013). In some cases,

corporations can even harm their reputation with the information disclosed, (Cho & Patten, 2007; Hu & Karbharl, 2015; Mousa & Hassan, 2015). When there are very few legal requirements or regulating bodies, companies may take the opportunity to disclose inaccurate information or misrepresent information, which may lead to the greenwashing of the firm (Hahn & Lülfs, 2014). Firms publishing disclosures in an environment with more readily enforced legal requirements, have a tendency to disclose less information than others (Cormier & Magnan, 1999). This indicates that in the absence of regulation, corporations may take advantage of the lack of monitoring and use environmental disclosures that lack evidence of environmental sustainability as a way to promote themselves.

Foreign ownership has been researched for its effects on CED with conflicting results. Several studies have suggested that companies having foreign ownership based in developed countries whilst the corporation itself is operating in a country with a developing economy, may increase the level of CED published by that corporation (Khan *et al.*, 2013; Khilf *et al.,* 2017; Malarvizhi, 2008; Oh *et al.*, 2011; Özen & Küskü, 2009). This is based on the idea that foreign owners influence a corporation's environmental standards. Other studies have found that there is no impact or a negative impact of foreign ownership on CEDs (Chaklader & Gulati, 2015; Haladu & Salim, 2016; Hossain & Andrew, 2006; Monteiro & Aibar-Guzman, 2010; Zeng et al. 2012). The reasoning behind results that show reduced disclosure from foreign-owned corporations is unclear. Though some researchers have suggested that the lack of increased disclosure from foreign-owned companies relates to the voluntary nature of environmental disclosure (Haladu & Salim, 2016), others state that no there is no explanatory power and indicate that significant impact of ownership on CEDs was expected (Chaklader & Gulati, 2015; Zeng *et al*., 2012).

Many of the drivers for companies to disclose environmental information correspond to legitimacy theory (Cho & Patten, 2007; Mousa & Hassan, 2015). This theory describes the legitimization process that many researchers credit for the development of environmental disclosure by corporations (Mousa

& Hassan, 2015). Legitimacy theory is based on pressure from society and therefore tends to affect corporations in industries with higher scrutiny more intensely (Cho & Patten, 2007). This provides a rationale for corporations to spend money producing environmental disclosures but also presents the motivation for corporations to report information in a way that may be misleading (Cho & Patten, 2007; Mousa & Hassan, 2015). Due to this, legitimacy theory has been blamed for creating an unreliable relationship between environmental disclosure and environmental performance (Cho & Patten, 2007; Hummel & Schlick, 2016). Himmel and Schlick (2016) also suggest that the quality of disclosure can be used to identify superior performing corporations from corporations seeking legitimization.

2.2.2 History of Corporate Environmental Disclosures

Corporate social responsibility was first discussed at length by Howard Bowen in the 1950s, where he wrote about the connection between business decisions and quality of life of the general society, this greatly influenced society's expectation for corporate activity (Bowen, 1953; Carrol, 1999). In the 1960s it became clear that a significant portion of the general public was concerned by environmental well-being, and the impact of corporations and industrial activities (Buhr & Freedman, 2001; Carrol, 1999). This was likely due to a number of high-profile environmental disasters around that time, including the great London smog of 1952 (Davis *et al*., 2002), Minamata disease in the late 1950s (Harada, 1995) and the publication of Rachel Carson's *Silent Spring* in 1962 (Long, 2000). In the 1970s the idea of corporate environmental disclosure began gaining recognition (Mathews, 1997). Following this, select corporations began using annual reports and other publications to report environmental information, realizing that such information could improve a company's image, while influencing stakeholders (Setyorini & Ishak, 2012). By the start of the 1980s, almost all large corporations included a brief acknowledgment of environmental performance as a part of their annual report (Lin, 2008). Also during this time, the idea of

an ethical investor began to form, going against the previous idea that investors did not want corporations to participate in corporate social responsibility activities for the reason that it reduced shareholders' equity (Bowman & Haire, 1975; Belkaoui, 1976).

By the 1990s the quantity of environmental disclosure published in annual reports had increased significantly for the majority of large corporations (Lin, 2008). Stakeholders began to harbour concerns regarding the accuracy of information being reported and encouraged imposing reporting requirements (Rockness, 1985). The next two decades of research were focused primarily on assessing the quality and quantity of disclosures (Lin, 2008; Sand & Van Buren, 1990). Additionally, the Global Reporting Initiative (GRI) was released in 1997 addressing stakeholder concerns and helped lead to an increase in the transparency and quality of disclosures (Malarvizhi, 2008).

From the early 2000s to today, CED research has branched out into several streams, Wilson (2013) identifies four main areas of research, including impact of environmental disclosure on financial performance (Hughes *et al*., 2001), the publication location of disclosures (i.e. annual reports, websites, advertisement) (Villiers & van Staden, 2011), the effect of external pressures on quality and quantity of disclosures (Iatridis, 2013; Islam & Islam, 2011), and the relationship between environmental disclosures and environmental performance (Meng *et al.,* 2014).

2.2.3 Corporate Environmental Disclosure in India

In India, the Ministry of Environment and Forests (MOEF) is the primary entity responsible for presiding over environmental preservation and conservation (Chaklader & Gulati, 2015). The MOEF has implemented several pieces of legislation to help meet the responsibilities of this position, including the Water Act, the Air Act and the Environment Act (Chaklader & Gulati, 2015). Despite this, India has experienced several notable environmental disasters, including the Bhopal disaster (Yang *et al*., 2014), the Pasarlapudi blowout (Srivastav *et al*., 1998), and Bellandur Lake (Samal *et al.*, 2011). The Bhopal

disaster is perhaps the most notable, as it is commonly referred to as one of the world's worst industrial disasters (Broughton, 2005; Chouhan, 2005; Stix, 1989).

Until 2015, all environmental disclosures from corporations operating in India were voluntary, with the exception of submitting a statement to the pollution control board (Sen *et al*., 2011). Although many larger corporations operating in India do report some environmental information, there is an abundance of criticism regarding these reports (Chaklader & Gulati, 2015). This includes the tendency of corporations to report exclusively on positive environmental aspects while dismissing negative impacts (Malarvizhi, 2008). From 2015 onwards, the Indian government made CSR disclosures mandatory through the Companies Act 2013 for corporations with revenue in excess of 10 billion rupees to publish information regarding their corporate social responsibility policy, though not necessarily environmental information (The Companies Act, 2013; KPMG, 2017). Information that the Act does require includes details regarding a CSR committee and their responsibilities, a CSR board statement, and a CSR policy, failure to do is punishable by fines (Deodhar, 2016). Environmental sustainability fits into the accepted streams for CSR disclosure and therefore the Act may influence corporations to disclose more environmental information. However, corporations can fulfill the requirements of the Act without discussing environment by instead focusing on health, education and other charity initiatives (Deodhar, 2016). Although there are no results yet of the effects of the Act on environmental disclosures, Deodhar (2016) predicts that mandatory requirements may reduce the quality of CSR initiatives. Deodhar predicts that corporations will anchor on to the requirements of the Act, which fail to specify requirements regarding quantity or quality, and that this could impact the natural development of increasing quality (Deodhar, 2016). Alternatively, other research has suggested that mandatory regulation increases the quality and quantity of environmental disclosure from corporations (Fatima *et al.,* 2015; Ioannou & Serafeim, 2017). These studies suggest that the reason for increasing quality and quantity lies in the expectation that corporations will first and foremost strive to meet the law and

failure to do this would significantly impact the corporations' reputation and legitimacy (Fatima *et al.,* 2015; Ioannou & Serafeim, 2017).

2.2.4 Agrochemical Industry

The agrochemical industry has assumed an important role in continued global food security and disease prevention (Unsworth *et al.,* 2012). The industry is responsible for the production of pesticides, herbicides, fertilizers, phytohormones and other growth aids (Sparks & Lorsbach, 2017; Research and Markets, 2016). Innovation in the agrochemical industry remains high, as corporations continue to develop new products to meet increasingly stringent environmental standards and predict agricultural resistance to applied substances (Sparks & Lorsbach, 2017). The agrochemical industry, globally, is expected to be valued at USD 260 billion by the year 2021 (Research and Markets, 2016).

Despite the agrochemical industry's role in global food security and affordable food pricing, it has been responsible for environmental degradation, as well as some of the most devastating industrial disasters in history. Strict environmental standards do exist for the use of agricultural chemicals, agrochemical products undergo up to eleven years of research and testing before being introduced to the market (Sparks & Lorsbach, 2017). Despite this, many substances are pulled off the market due to environmental or health impacts of the products years or decades after being approved without fully understanding of non-target effects (Hayes & Hasen, 2017; Sparks & Lorsbach, 2017). Currently, the development of new agrochemical compounds requires eleven years of research and testing, and requires almost USD 300 million of investment (Sparks & Lorsbach, 2017). Regardless, many health and safety concerns exist around the agrochemical industry, including impacts to wildlife, water contamination, and human health effects (Aktar *et al*., 2009; Hayes & Hasen, 2017).

In addition to environmental degradation, the agrochemical industry can also have adverse health effects. The agrochemical industry is connected to an estimated one million deaths globally each year,

through chronic and acute pesticide poisoning, with up to 260,000 being intentional poisoning (Aktar *et al*., 2009; Mew *et al.*, 2017). Most of these deaths occur in high-risk populations in developing countries, including primary workers in production plants and residents in rural areas (Quinteros *et al*., 2017; Aktar *et al*., 2009). General populations are also put at risk due to the lack of regulation for agrochemical disposal, specifically, the disposal of banned chemical compounds, which in developing countries are often illegally dumped by manufacturers when no longer saleable (Quinteros *et al*., 2017).

India began producing agrochemicals in 1952 and is currently the twelfth largest producer of agrochemicals globally (Aktar *et al*., 2009). The Indian agrochemical industry provides products for both national use as well as exports (KPMG, 2016). In India, the agricultural industry accounts for fifteen percent of the country's GDP despite challenging growth conditions (KPMG, 2016). India has also become a preferred supplier of low-cost generic agrochemicals for non-patented compounds (KPMG, 2016).

The agrochemical industry was selected to be studied because of its prominent role in India and in India's economy. It was also selected because of the industry's potential for future growth as the agricultural industry continues to be impacted by the effects of climate change. Additionally, the CEDs from companies operating in the agrochemical industry were of particular interest because of the environmentally sensitive nature of the industry.

2.2.5 Legitimacy Theory

Many theories have been applied to corporate reporting in an attempt to determine the corporate motivation for reporting, including legitimacy theory, stakeholder theory, accountability theory, and agency theory (Donovan, 2002). Legitimacy theory posits that corporations maintain their legitimacy or reputation by meeting the expectation of society as a whole. Suchman (1995: 574) offered the following definition for legitimacy: "generalized perception or assumption that the actions of an entity are

desirable, proper or appropriate within some socially-constructed system of norms, values, beliefs and definitions". This continues to be the most used definition of legitimacy, though some researchers have questioned the vagueness of the definition (Deephouse *et al*., 2017). Legitimacy theory, however, is one of the leading theoretical frameworks used when examining corporate disclosures, largely because corporate disclosures are the main way a corporation can demonstrate that they are fulfilling the expectations of society (Arora & Lodhia, 2017). Legitimacy theory expects that organizations will act in a way that abides by societal norms and expectations (Braam *et al*., 2016; Deegan, 2002).

One way for corporations to communicate their environmental responsibility and therefore indicate that they are fulfilling society expectation is through disclosures in annual and sustainability reports (Braam *et al*., 2016). Consequently, corporations may also disclose information that does not accurately depict the corporations' environmental performance (Ashforth & Gibbs, 1990; Braam *et al*., 2016; Cho et al. 2007). This is not always done in an attempt to greenwash corporate activities; though this certainly occurs, it can also be an attempt to secure corporate legitimacy by not drawing attention to areas of operation that may not fulfill society's expectations (Hahn & Lülfs, 2014). As a result, the relationship between environmental reporting and environmental performance is not able to be ensured (Braam *et al*. 2016, Clarkson *et al*., 2011; Hughes *et al*., 2001 & Ingram & Frazier, 2017).

Corporate legitimacy is a highly dynamic and a valuable resource for companies, as social values and expectations are constantly changing and therefore corporations must continually change to meet and predict these expectations (Ashforth & Gibbs, 1990). If a corporation does meet society's expectations it can gain legitimacy, which is associated with increased organizational survival (Ashford & Gibbs, 1990; Dowling & Pfeffer, 1975; Suddaby *et al*., 2017). However, because a society's expectations are ever-changing, if a corporation ceases to adapt, its legitimacy can be negatively impacted.

Furthermore, multinational corporations face increased complexity in achieving and maintaining legitimacy (Kostova & Zaheer, 1999). This is because in addition to facing the complex institutional environment that all organizations encounter, multinationals are also faced with increased complexity within the corporation itself caused by fragmentation, operation in several institutional environments, and liability of foreignness, which refers to obstacles faced by corporations operating in a foreign market (Fiaschi *et al*., 2014; Kostova & Zaheer, 1999).

2.2.6 Hypothesis development

The purpose of this study is to address two main points of interest. The first is to investigate if there have been significant changes in the reporting practices of select corporations over the past fifteen years. The other is to examine if there is standardization in reporting practices across the CEDs published by the three categories of corporations. To achieve this, two main hypotheses have been developed. The first posits that all corporations will increase the diversity, quantity and quality of their environmental disclosures over the timeframe examined. The second is that the environmental disclosures of foreign subsidiaries will be more similar to the disclosures of domestic corporations rather than the disclosures of the parent multinational corporation. The hypotheses are tested using content analysis to first quantify the data, then analyzed using simple linear regression and two-way repeated measures ANOVA.

The hypotheses for this study were developed based on the lack of knowledge surrounding the differing quality, quantity, and diversity of corporate environmental disclosures (CEDs) of multinational subsidiary corporations. There is a large collection of corporate environmental disclosure research that exists; however, the majority of CED research that has been conducted focuses primarily on large multinational corporations, leaving a gap in understanding regarding how the CEDs of subsidiary operations align with those of their parent corporations (Kolk & Pinkse, 2010; KPMG, 2011; Park &

Ghauri, 2015; Wilson, 2013). This will be addressed by analyzing the environmental disclosures from three categories of corporations: multinational parent companies, multinational subsidiary companies, and domestic Indian corporations. This will be done to explore if there has been a significant change in the disclosures of these corporations between 2002 and 2016 and if the environmental disclosures of the Indian subsidiary corporations are more similar to the domestic corporations or the parent corporations, in aspects of quality, quantity and diversity.

The history of CED research has witnessed an ever-increasing pattern of environmental disclosures for many corporations, primarily large corporations in developed countries (Ezhilarasi & Kabra, 2017; Lin, 2008). Data available for this study will span from 2002 to 2016. With this timeframe, it will be possible to identify certain changes and trends in environmental disclosure for corporations in all categories. It is expected that corporations operating in India will increase the quality, quantity, and diversity of environmental disclosures to meet government standards or surpass standards to maintain a competitive advantage. With that in mind, the following hypotheses are proposed:

H1a: Each corporation categories studied will increase the diversity of environmental disclosures over the timeframe examined.

H1b: Each corporation categories studied will increase the quantity of environmental disclosures over the timeframe examined.

H1c: Each corporation categories studied will increase the quality of environmental disclosures over the timeframe examined.

Previous research suggests that there are differences between environmental disclosures produced by corporations operating in developed and developing countries, with reasons for these differences including resources available, public scrutiny, and business culture (Ali *et al.,* 2017; Adhikari *et al*., 2015; Luo *et al*., 2013). Many of these factors are altered depending on the ownership scheme of

a corporation, foreign ownership is believed to have an impact on the level of disclosure from corporations operating in developing economies, although conflicting results fail to conclude if this is positive or negative (Chaklader & Gulati, 2015; Haladu & Salim, 2016; Hossain & Andrew, 2006; Monteiro & Aibar-Guzman, 2010; Zeng *et al.* 2011).

It is expected that the foreign subsidiary corporations will have environmental disclosures that are more similar to those of the domestic corporations rather than the parent multinational corporation. There are a number of reasons for this expectation. Previous research has shown that, in many cases across several countries and industries, that foreign ownership has little or negative impact on environmental disclosure (Chaklader & Gulati, 2015; Darus *et al.*, 2009; Haladu & Salim, 2016). In these studies corporations operating in developing countries disclosed in a way that was similar to domestic corporations or even in a way that was poorer than domestic corporations despite the expectation that subsidiaries with foreign ownership would be better disclosures. There are some studies indicate that foreign ownership has a positive effect on environmental disclosure (Ezhilarasi & Kabra, 2017; Riaz *et al.*, 2015). Although a positive relationship is the less common finding in this track of research, many researchers indicate that a positive relationship is more expected and logically easier to explain. The purpose of examining this is to contribute to the examination of the effects of foreign ownership and add data from the analysis of the foreign owners in the form of parent multinationals to for additional context. Wilson (2013) found that the disclosures of foreign multinational subsidiaries were more similar to the disclosure of the local domestic corporations than to the parent corporation. This would indicate that the environmental disclosure of the subsidiary is localized, as opposed to standardized, within the multinational corporation.

The majority of previous CED research that has been conducted focuses primarily on large multinational corporations, such as the Fortune 500 companies or the top listed corporations in a selected country (KPMG, 2011; Wilson, 2013; Kolk & Pinkse, 2010). Studies examining the CEDs of

multinationals rarely include subsidiary corporations, and studies focused on domestic corporations rarely make a distinction between domestically owned corporations and foreign-operated multinational subsidiaries (Wilson, 2013). Empirical literature reviews have called for further research in the area of CED and more comprehensive analysis and still fail to identify the gap of subsidiary companies (Ali et al., 2017; Fifka, 2013). The objective of this research is to analyze CEDs from primary multinational corporations, multinational subsidiary corporations and domestic corporations to determine the quality, quantity, and diversity of information presented to determine if multinational corporations are standardizing CEDs in all areas of operation, in this case in developed and developing countries of operation. The idea of CED standardization is based on the standardization as utilized in international marketing (Haron, 2016 ;), which has already been integrated and applied to the analysis of corporations reporting and disclosure practices (Arora & Lodhia, 2017; Cho & Patten, 2007; Hunter & Bansal, 2006).

Building on the discussion above, the following hypotheses are proposed:

H2a: The diversity of environmental disclosures of P-MNCs and I-MNCs will lack standardization, and the environmental disclosures of I-MNCs will be more similar to those of domestic corporations than the P-MNC.

H2b: The quantity of environmental disclosures of P-MNCs and I-MNCs will lack standardization, and the environmental disclosures of I-MNCs will be more similar to those of domestic corporations than the P-MNC.

H2c: The quality of environmental disclosures of P-MNCs and I-MNCs will lack standardization, and the environmental disclosures of I-MNCs will be more similar to those of domestic corporations than the P-MNC.

2.3 Methods

2.3.1 Sample Selection

Selection of the multinational corporations was determined by first compiling a list of agrochemical corporations; in total, over 200 companies were initially included. From there, the twenty listed corporations with the highest revenue were selected. From this list of twenty, corporations were eliminated if a corporation's headquarter operations were not based in North America or Europe or if the primary business operations were not in the agrochemical industry. The reason North America and Europe were focused on is that companies based in these locations consistently report in English. Additionally, if a corporation did not have a subsidiary corporation operating in India it was also eliminated. There were nineteen corporations from the original list of twenty that met the selection criteria (i.e. only one company was eliminated from the list after applying the screening criteria). From the list of the remaining 19 companies, four corporations were randomly selected and consequently selected to be included in the study. The reason four corporations were selected is that the manual coding of documents is highly time and labour intensive, meaning the sample size had to be limited, particularly given that the timeframe of the analysis covers 15 years of disclosures. These corporations were selected as the P-MNC corporations [Table 1]: Bayer CropScience, Syngenta AG, BASF SE, and Monsanto Corporation. The Indian subsidiary corporations were selected correspondingly to the parent multinational corporations. These corporations operate under the names Bayer CropScience (India), Syngenta India Ltd., BASF India Ltd., and Monsanto India Ltd.

The Domestic Indian corporations were selected by compiling a list of Indian agrochemical companies, which resulted in a sample of fifty-four corporations. This was narrowed by eliminating non-publicly traded corporations and corporations that did not have primary business operations in agrochemicals. This resulted in twenty-six appropriate corporations, from which four companies were randomly chosen.

The final selection of corporations was United Phosphorus Ltd., Zuari Agro Chemical Ltd., Rallis Ltd., and Coromandel International Ltd. In total twelve corporations were selected for this study and represent three different categories of corporations, P-MNC, I-MNC, and domestic corporations.

2.3.2 Content Analysis

This study utilizes content analysis to quantify the qualitative and quantitative information published by the selected corporations. Content analysis is a common tool used to systematically analyze reports and written material (Beck *et al*., 2010). By analyzing the content of the material, manageable quantitative data can be extracted (Weber, 1990). Content analysis can range from very simple analysis, where a single keyword is quantified from the text to more complex analysis measuring multiple themes (Weber, 1990). Furthermore, content analysis can be coded either by the user themselves or by a computer Weber, 1990). Computer-based analysis results in excellent reliability but cannot be applied to all coding requirements.

Table 1: Profiles of corporations selected for research

Category	Corporation	Location	Revenue for FY16	Number of Employees for FY16
Parent Multinational	Monsanto Corporation	USA	13,502	20,800
	BASF SE	Germany	57,550	113,830
	Bayer Cropscience AG	Germany	46,769	115,200
	Syngenta AG	Switzerland	12,790	27,810
Subsidiary Multinational	Monsanto India Ltd	India	123.7	268
	BASF India Ltd	India	10,232.94	1,868
	Bayer Cropscience	India	5460.00	1,126

	Ltd (India)			
	Syngenta India Ltd	India	440.56	Not disclosed
Domestic	Rallis	India	330.18	952
	Coromandel	India	2,164.81	4,309
	Zuari	India	728.24	727
	United Phosphorus	India	3141.11	3,489

Beck *et al.* (2010) classify content analysis into two approaches: mechanistic or interpretive. Mechanistic approaches are the more traditional content analysis, where written work is analyzed based on the frequency of keywords, or simply by the quantity of the report (Beck *et al*., 2010). A mechanistic approach to content analysis is simple and commonly used but can lack value due to the inability to contextualize the information. An interpretive approach is meant to acknowledge the narrative of the written report by focusing on the message (Beck *et al*., 2010). An interpretive approach provides more complete insight into the data collected but is more complex to perform and not as commonly used.

The content analysis approach selected for this research is consolidated narrative interrogation (CONI). Developed by Beck et al. (2010), it is specifically tailored for the analysis of environmental information. Consolidated narrative interrogation (CONI) attempts to create a hybrid of mechanistic and interpretive approaches to develop a content analysis that is both user-friendly and comprehensive (Beck *et al.*, 2010). CONI was selected for use in this research because it provides a more comprehensive analysis of the data when compared to selecting an analysis that is exclusively mechanistic or interpretive. This research analyses data collected by two coders to ensure the reliability of the data, inter- and intra- user reliability testing was performed on a 10 percent sample of documents that were subjected to a test-retest analysis. Intra-user reliability was rated at 0.91 and inter-user reliability was rated at 0.85 using

Krippendorf's alpha. Krippendorf's alpha is considered conservative, and a score above 0.80 is viewed as widely acceptable (De Swert, 2012; Tilt, 2001).

CONI is unique because it allows the user to rate a unit, in this case, a sentence, on three criteria at once. CONI measures the diversity, quality and quantity of a document by recording the category of disclosure, the quality of the information, and the overall amount of relevant information. The unit for measurement in this method is a sentence; therefore, any sentence containing relevant corporate environmental disclosure (CED) is analyzed according to the following steps.

2.3.2.1 Diversity Coding

The first step in the process is to determine the diversity category best suited to the relevant sentence. Beck *et al.* (2010) initially developed 12 Categories and 48 sub-categories for diversity coding. Beck *et al.* (2010) used the measurement of diversity to assess the environmental message, the more categories that a CED reports on the more comprehensive the publication. This study, however, will use the adapted categories developed by Wilson (2013), which features 18 categories and 59 sub-categories [Table 2]. Wilson developed these additional categories to better suit the application of the method specifically to the disclosure material of agrochemical companies and to address environmental issues that had come to light following 2010 when the categories were developed. The categories added where tested to ensure that they were reliable and mutually exclusive (Wilson, 2013). Newly added categories were GEN-8, PROD-1, PROD-2, SUST-4, ACT-5, RC, ENE-3, INP-1, INP-2, SUPP, COMP-1, COMP-2, COMP-3, and ECE. Additionally, some categories that were present in Beck *et al*.'s original categories were removed in order to be more specifically addressed in the new categories, these were by the original classification given in Beck et al., POLL-5, POLL-6 (Wilson, 2013).

All sentences containing CED information are classified into a category and sub-category based on the overall meaning of the sentence. If the coder is unable to determine a singular meaning for the

sentence, then the sentence will be classified based into the category relevant to the first point made in the sentence.

To score the diversity of a publication, categories that are reported on are assigned a value of one and categories that are not reported on are given a value of zero. These values are totalled to give the final score. The highest score possible for a publication to receive is 18.

2.3.2.2 Quality Coding

After a unit has been classified into a diversity category, it is then coded based on the quality of information disclosed in the sentence. This measurement is used to determine the "the level of information provided combined with the depth or detail of the disclosure" (Beck et al., 2010, pg. 213). This step includes five "types" of disclosures based on whether the information present is high quality

Table 2: Diversity coding categories and sub-categories for CONI diversity analysis

Category	**Sub-Category**
GEN: General environmental information	1: Any general mention
	2: Aims, goals or commitments
	3: Management Systems & Processes
	4: Disclosure guidelines, including GRI
	5: Environmental Initiatives, ie REACH
	6: Results from audits, policies etc.
	7: Long-term policy, goals etc.
	8: Continuous Improvement
RES:	1: Top management
Those responsible for the environmental behaviour or implementation of activities	A. Committee/ department
	B. Individual/ Membership
	C. Aims and objectives
	2: Results
	3: Reference to employees
POLL: Pollution	1: Air
	A. Emissions (Actual and Result)
	B. Action/ Target
	2: Water
	A. Emissions (Actual and Result)
	B. Action/ Target
	3: Waste
	A. Emitted (Actual and Result)
	B. Action/ Target
	C. Recycling (must include the word recycle)
	4: Land
	A. Emission (Actual & Result)
	B. Action/ Target
	5: Emission and Pollution related to products
PROD:	1: Product Stewardship
Product disclosures	2: Mention of environmentally friendly products
SUST:	1: General mention of sustainability
Sustainability disclosure	2: Commitment to UNCED, Kyoto, etc.
	3: Biodiversity conservation
	4: Mention of climate change
ACT:	1: Staff Training
Environmental Activities	2: Project Involvement (without partnership)
	3: Awards

	4: Sponsoring
	5: Partnerships (must use word partner/ partnership)
BRR:	1: Environmental risks related to business
Business Risk	2: Attempts to manage or reduce environmental risks
	3: Related costs
PRESS:	1: Shareholders
Pressure Groups	2: Stakeholders
	3: Government
SER:	1: Separate report references
Separate Environmental Report	2: Contact details
RC:	Any mention of Responsible Care
Responsible Care	
ENE:	1: Conservation/ energy saving attempts (Goals & Results)
Energy Disclosure	2: Energy use, development and exploration of alternative energy
	3: Energy usage
INP:	1: Water Input
Resource Input	2: Resource Input, renewable, non-renewable, toxic etc.
SUPP:	Mention of sustainable supply chain, environmental requirements and/or supplier
Supplier Related Disclosure	compliance
COMP:	1: Compliance with environmental laws, regulations and/or voluntary compliance with
Compliance Disclosure	initiatives
	2: Non-compliance, including fines and lawsuits
IRP:	The process to obtain feedback from stakeholders
Information Retrieval Process	
OTHER	Disclosure not fitting in the above categories, i.e., Transportation, transparency, accountability etc.
ECE:	Mention of weather-related information, including droughts and rainfall but excluding
External Environmental Factors	related business risks

(Type 4 + 5), low quality (Type 1 + 2), or in-between (Type 3) [Table 3]. A Type 1 disclosure is the lowest quality disclosure; these are purely narrative disclosures that tend to be vague, unclear and present little material of value. Type 1 disclosures are commonly used when introducing topics or filling space. Type 2 disclosures are also narrative only or qualitative (i.e., the same as Type 1). However, Type 2 disclosures offer significant information, including specific details and are generally more relevant than Type 1 disclosures. Disclosure Types 3, 4 and 5 all contain an aspect of the quantitative disclosure. It should be noted, however, that for data to count as being quantitative, numerical information must be measurements or data relevant, the inclusion of a year or count of an insignificant element, for example number of goals set for a year, does not classify as meeting the quantitative requirement of a type 3, 4, or 5 disclosure. A Type 3 disclosure gives only or primarily quantitative information with little or no qualitative information. Type 4 disclosures include qualitative information, along with a related narrative aspect or explanation. Finally, Type 5 disclosures have quantitative information that compares data for multiple years. Type 5 disclosures can have a narrative component, but it is not necessary. In general,

identifying the quality of disclosure in a sentence is not difficult based on the specific requirements of each category.

2.3.2.3 Quantity Coding

The final step of the coding process is to determine the quantity of CED sentences reported by the corporations. This is measured by adding the total number of sentences containing information pertaining to the environment as described by the 18 categories. Adding the total number of these sentences will reveal the total quantity for the entire report.

2.3.3 Analysis

The analysis was performed separately on measurements of diversity, quality, and quantity data to preserve the multifaceted advantage of using the CONI method. The analysis focused on two main elements. First, a simple linear regression was used to indicate the significance of the change in a parameter over the timeframe. Second, a repeated measures two-way ANOVA was used to assess the

Table 3: Examples of Quality type disclosure classifications

Disclosure Type	Example	Explanation
Type 1	"Most importantly, we approach sustainability as a long-term, collaborative effort." (Monsanto CSR Report, 2016 pg. 4)	This sentence is vague and includes no goal or plan for execution; because of this it offers little value and is classified as a Type 1.
Type 2	"In November 2015, Monsanto signed the White House American Business Act on Climate Pledge, which affirmed our commitment to climate action and our support for a strong outcome from the United Nations Framework Convention on Climate Change Conference in Paris (COP21) that took place in December 2015." (Monsanto CSR Report, 2015, pg. 53)	This disclosure offers information beyond a general level, including a specific commitment to and named authority. Note the use of the year does not count as quantitative information and therefore does not make this disclosure appropriate for Type 4 classification; it is instead classified as a Type 2.

Type 3	“The Group’s total energy consumption meanwhile was even down 2.8% at 80.8 petajoules.” (Bayer Annual report, 2013, pg. 132”	This disclosure offers primarily quantitative information with little narration or explanation.
Type 4	“Additionally, during the current year, the Company has recognized the business interruption claim amounting to `2500 lakhs received from the Insurance company on account of the 'Hudhud' cyclone in Vishakapatnam unit.” (Coromandel Annual Report, 2015, pg 123)	This sentence includes an element of both quantitative and qualitative information, but doesn’t compare to any additional years; for this reason, it is classified as a Type 4 disclosure.
Type 5	[Chart format] “Total waste; Landfill; FY14 8,600; FY15 7,060” (Monsanto CSR Report, 2015, pg 76)	This chart entry contains data for the financial year 2014 and 2015; because a Type 5 disclosure doesn’t require a narrative component, this classifies as a Type 5.

significance of the difference in reporting between corporation categories and the interaction over time. Using a repeated measures analysis helps account for individual variability of a corporation and the possibility that a corporation may be an exceptionally good or poor reporter.

2.4. Results and Discussion

Results were collected from a sample of 12 companies from 2002 to 2016 in three different categories of corporations: domestic, I-MNC, and P-MNC.

2.4.1 Significance Over Time

One of the objectives of this research was to examine the trends of disclosures from the three categories over a fifteen-year timeframe. To do this, simple linear regression was performed for the results from each corporation for diversity, quantity, and quality to determine if there was statistically significant change over time.

2.4.1.1 Diversity

All corporations in all three categories showed an increase in diversity over time [Fig 1-3]. In 2002, the average diversity score for domestic corporations, I-MNC, and P-MNC was 10, 9.25, and 11, respectively. By 2016, the mean diversity scores had increased to 13.5, 14.25 and 16.75 for domestic corporations, I-MNC, and P-MNC, respectively. Plotting the mean diversity for each category reveals that the rate of increase for domestic and I-MNC corporations is very similar, while the rate of increase for P-MNC is higher [Fig 4].

Results show that the change in diversity over time was significant for half of the domestic corporations (UPL (p=0.01466), Zuari (p=0.001083)), half of the I-MNCs (I-BASF (p=0.027049), I-Bayer (p= 0.069676)), and all P-MNC (P-BASF (p=0.006416), P-Bayer (p=0.002247), P-Monsanto (p=0.000169), P-Syngenta (p=0.093532)). Overall regression based on the mean value of each category shows statistical significance for domestic corporations (p=0.002728) and P-MNC (p=2.67E-05), but not for I-MNC (p= 0.173379). Regardless, it is observable from the data that the diversity scores of I-MNCs are increasing overall despite the lack of significance [Fig 2]. Plotting the mean diversity for each category also reveals that the rate of increase for domestic and I-MNC corporations is very similar, while the rate of increase for P-MNC is higher [Fig 4].

By the end of 2016, several of the P-MNCs were reporting on all possible categories of disclosure, but I-MNCs and domestic corporations noticeably lacked or had low disclosure in areas such as environmental responsibility/management (RES), pressure groups (PRESS), information retrieval process (IRP), responsible care (RC) and pollution (POLL). As previously discussed, legitimacy is a key reason for disclosing information deemed desirable by societal pressures and this observation may be explained by the application of legitimacy theory. I-MNCs and domestic corporations both operate in India which means they both share some common stakeholders (local community, customers, local government)

that P-MNCs do not. If I-MNCs and domestic corporations perceive a lack of interest in certain areas by the stakeholders in the societies in which they operate, they may choose not to disclose on these topics. Additionally, I-MNCs and domestic corporations may avoid disclosing information pertaining to these areas, if they fear losing legitimacy based on poor or inadequate performance.

2.4.1.2 Quantity

Similar trends are evident for the analysis of quantity [Fig 5-8]. In 2002, the average quantity for domestic corporations was 69.5, for I-MNC was 50, and for P-MNC was 230.25. By 2016, the average quantity of CED material published was 233.5, 128.25 and 577, for domestic corporations, I-MNC and P-MNC, respectively. For quantity measurements, P-MNCs scored much higher than domestic and I-MNCs. CEDs from domestic corporations on average were slightly higher than I-MNCs [8].

Quantity over time is a statistically significant factor for half of the domestic corporations (UPL (p= 0.002953), Zuari (p=0.003492)), one I-MNC (I-Syngenta (p=0.097297)), and three P-MNC (P-BASF (p=0.012364), P-Monsanto (p=3.94919E-05), P-Syngenta (p=0.000613)). Based on mean quantity, time is a significant factor for all categories of corporation (domestic (p=0.001097), I-MNC (p=0.049118), P-MNC (p=0.00044)).

Outliers in data, including a cluster of reports from Rallis India for the years 2007, 2008, 2009, UPL for the year 2016, I-BASF for the year 2010 and P-Bayer CropScience years 2004 and 2012. Rallis India experienced an increase in profits following a period of losses in the years leading up to the publication of the highlighted reports, also a new executive director came into power in 2007. UPL didn't have outstanding financial growth leading up to 2016, however, the 2016 annual report titled "Doing Things Better" and highlighted the renewed importance of CSR performance. In 2010 I-BASF faced a large merger between Ciba India Ltd and BASF India, which also increase company sales. No significant events connected to Bayer CropScience could be found around the year 2004, however around 2012 scientific

articles (Henry *et al*., 2012; Whitehorn *et al.*, 2012) and news articles (Borenstein, 2012; Marcott, 2012) reporting on the effects of neonicotinoid pesticides on bumblebees received significant attention. Bayer CropScience was particularly villanized as they are leading producers of this class of pesticides. While these events cannot be exclusively used to explain the increase in the quantity of the reports published by these companies on specific years, it does suggest that corporations may vary their disclosure in response to other business and reputational influences.

As predicted by previous research, P-MNCs do show a significantly higher quantity of CEDs (Ezhilarasi & Kabra, 2017; KPMG, 2011). Additionally, by examining the quantity over so many years, it can also be seen that the rate of increase is higher for P-MNC than for domestic corporations and I-MNC [Fig 8]. Therefore, despite that fact that all the corporate categories have increased quantity over the last

Table 4: Diversity scores for CEDs from domestic corporations (Coromandel, Rallis India Ltd, United Phosphorus and Zuari), I-MNC (I-BASF, I-Bayer Cropscience, I-Monsanto, I-Syngenta) and P-MNC (P-BASF, P-Bayer Cropscience, P-Monsanto and P-Syngenta) for the years 2002-2016.

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Coromandel	12	12	12	7	8	8	7	9	12	11	8	12	9	11	13
Rallis India Ltd	12	10	10	10	10	16	16	16	11	12	10	12	11	12	14
United Phosphorus Ltd (UPL)	9	10	12	11	11	11	13	10	13	12	12	11	14	11	14
Zuari	7	7	6	6	6	6	7	8	8	9	9	6	10	14	13
I-BASF	11	11	10	12	10	10	9	10	15	16	13	13	10	14	16
I-Bayer Cropscience	6	11	12	12	11	12	12	13	14	12	11	11	11	11	16
I-Monsanto	11	12	12	11	8	8	10	11	13	8	10	13	N/A	14	15
I-Syngenta	9	8	11	8	N/A	N/A	9	11	9	10	N/A	10	11	10	10
P-BASF	17	16	15	17	16	16	17	18	17	17	18	17	17	18	18
P-Bayer Cropscience	6	7	16	15	16	17	18	16	17	17	18	17	17	18	18
P-Monsanto	7	9	10	15	14	11	15	14	14	15	16	15	16	16	16
P-Syngenta	14	13	10	14	15	15	12	14	14	13	13	15	15	15	15

N/A represents a lack of disclosure

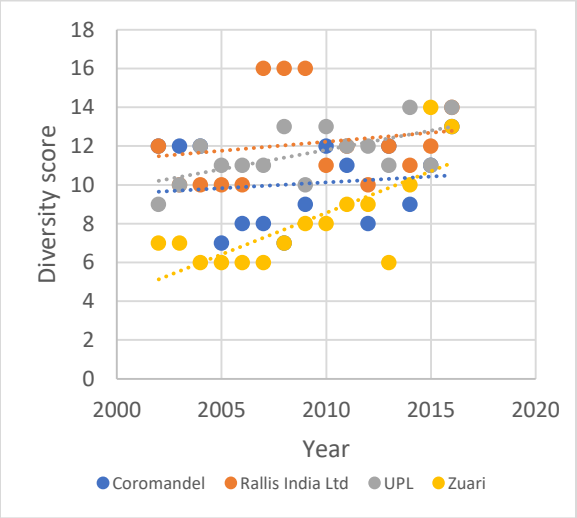

Figure 1. Total diversity score of disclosure for domestic Indian corporations from 2002-2016. Coromandel (p=0.649221), Rallis (p=0.518678), UPL (p=0.01466), Zuari (p=0.001083)

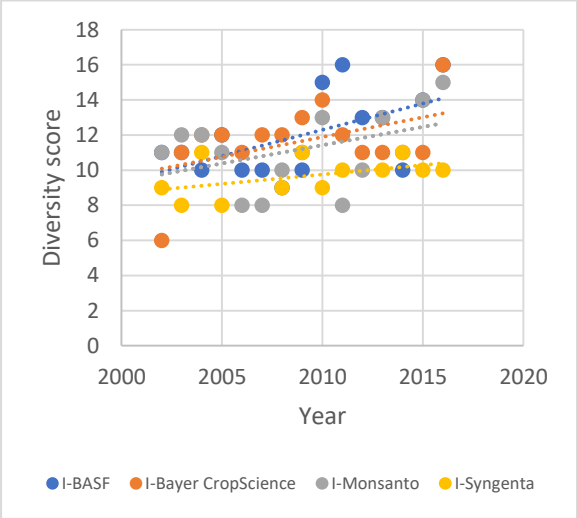

Figure 2. Total diversity score of disclosure for I-MNCs from 2002-2016. I-BASF (p=0.027049), I-Bayer (p=0.069676), I-Monsanto (p=0.16152), I-Syngenta (p=0.110613)

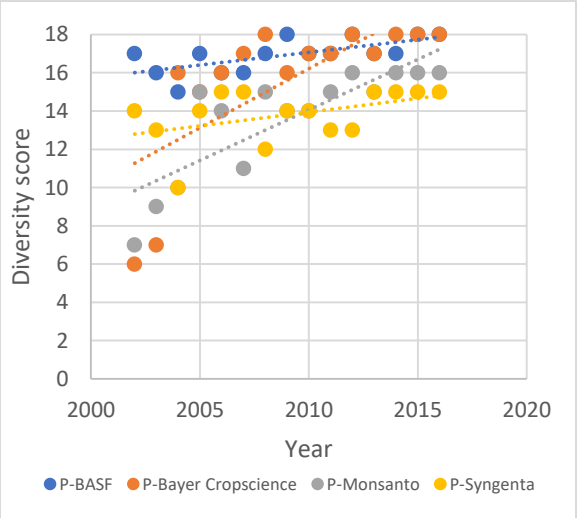

Figure 3. Total diversity score of disclosures from 2002-2016. P-BASF (p=0.006416), P-Bayer (p=0.002247), P-Monsanto (p=0.000169), P-Syngenta (p=0.093532)

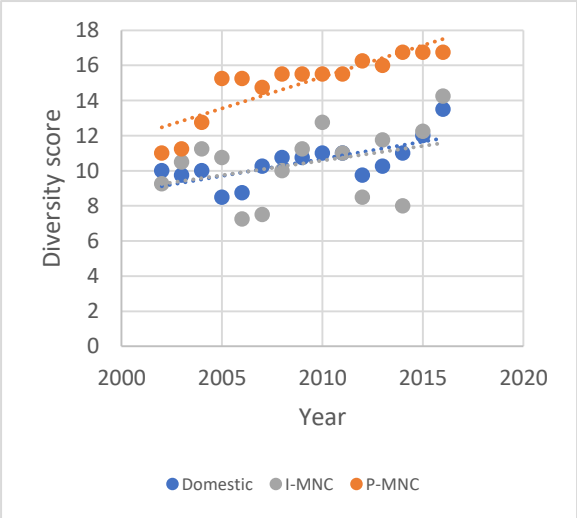

Figure 4. Mean diversity score of disclosures from domestic Indian corporations, I-MNCs and P-MNCs from 2002-2016. Domestic (p=0.002728), I-MNC (p=0.173379), P-MNC (p=2.67E-05)

Table 5: Quantity of CEDs from domestic corporations (Coromandel, Rallis India Ltd, United Phosphorus and Zuari), I-MNC (I-BASF, I-Bayer Cropscience, I-Monsanto, I-Syngenta) and P-MNC (P-BASF, P-Bayer Cropscience, P-Monsanto and P-Syngenta) for the years 2002-2016.

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016

Coromandel	101	106	88	48	40	46	56	60	101	90	53	79	76	95	192
Rallis India Ltd	89	61	58	55	54	275	264	344	89	94	104	140	88	175	205
United Phosphorus Ltd (UPL)	22	60	67	74	83	78	80	80	106	95	131	131	143	104	372
Zuari	66	63	54	72	49	53	52	56	67	58	189	59	185	202	165
I-BASF	60	73	68	72	64	73	96	97	103	64	107	81	71	91	163
I-Bayer Cropscience	48	53	93	106	75	79	94	91	100	85	85	64	72	57	149
I-Monsanto	54	67	73	63	53	44	65	179	129	71	76	97	-	111	141
I-Syngenta	38	38	38	33	-	-	34	45	42	50	-	80	47	63	60
P-BASF	589	299	364	393	463	433	638	575	552	535	517	557	580	590	615
P-Bayer Cropscience	43	40	1141	743	735	857	1046	903	900	897	1282	739	757	692	599
P-Monsanto	29	76	106	282	318	398	91	376	398	607	519	278	620	649	701
P-Syngenta	260	147	165	214	258	339	258	273	277	258	265	284	341	398	393

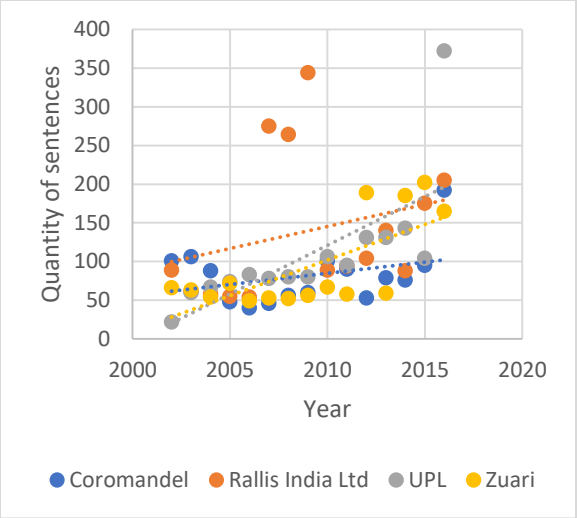

Figure 5. Total quantity of disclosures for domestic Indian corporations from 2002-2016. Coromandel (p= 0.212673), Rallis (p=0.318744), UPL (p= 0.002953), Zuari (p=0.003492).

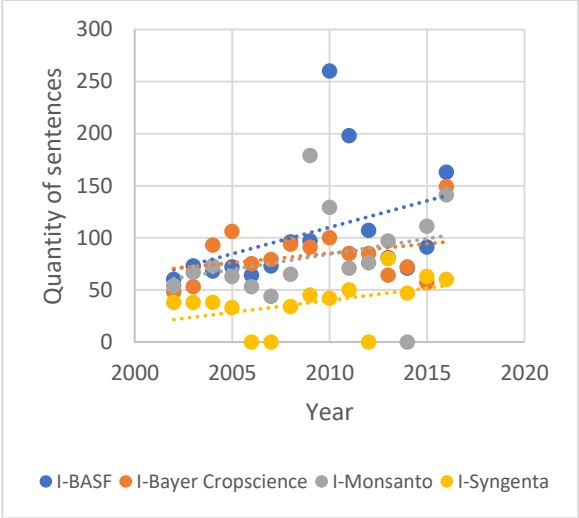

Figure 6. Total quantity of disclosure for I-MNCs from 2002-2016. I-BASF (p=0.144962), I-Bayer (p=0.242071), I-Monsanto (p=0.274214), I-Syngenta (p=0.097297).

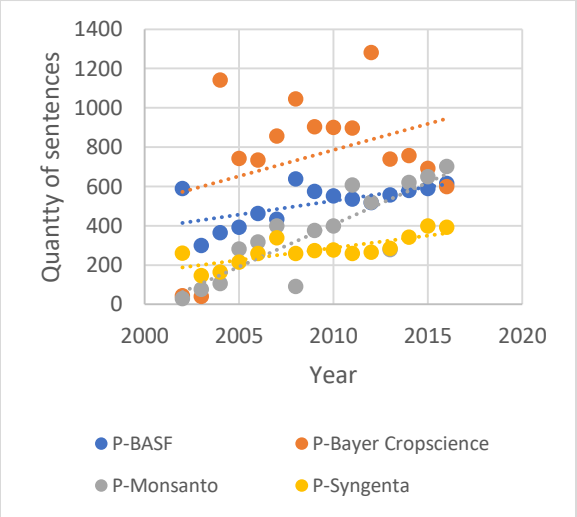

Figure 7. Total quantity of disclosure for P-MNCs from 2002-2016. P-BASF (p=0.012364), P-Bayer (p=0.203456), P-Monsanto (p=3.94919E-05), P-Syngenta (p=0.000613).

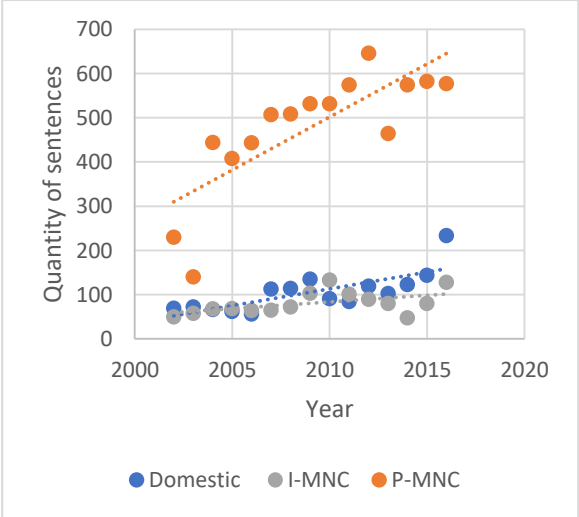

Figure 8. Mean quantity of disclosure for domestic Indian corporations, I-MNCs and P-MNC for 2002-2016. Domestic (p=0.001097), I-MNC (p=0.049118), P-MNC (p=0.00044).

fifteen years, there continues to be a gap between the quantity of disclosure from P-MNC and from the other corporations. In fact, because the rate of increase in quantity from P-MNCs is so high, the difference between the quantity of disclosure for P-MNC and Indian based corporations is becoming

greater over time.

2.4.1.3 Quality

Quality of disclosures was determined by the type of disclosure from Type 1 to Type 5. It was measured by the percent of disclosures sorted by type. Domestic corporations [Fig 9-12] had considerable Type 5 disclosures around the 2004-2007 time period caused by disclosures from Rallis Indian Ltd, but fewer by 2016, with the exception of Zuari [Fig 12]. I-MNCs had large portions of Type 1 disclosures and fewer Type 2 disclosures than domestic corporations [Fig 13-16]. P-MNC had the most uniform and consistent portions of Type 1 and 2 disclosures, but overall low portions of high-quality disclosures (Type 4 and 5). Results show that the change in quality over time is significant for at least one of the types of quality for all domestic corporations, two I-MNCs (I-BASF and I-Bayer), and all P-MNCs.

General trends showed a decrease in the total percentage of Type 1 and Type 5 disclosures for domestic corporations, as well an increase in Type 2 and 4 disclosures. It is encouraging to see domestic corporations moving away from Type 1 disclosures as the foundation of their CEDs, given that they do not offer much useful information. Domestic corporations also had a high level of Type 5 disclosure compared to other corporations in the earlier years, indicating a high level of quality. The percentage of Type 5 disclosures for most domestic corporations declined around 2007. Also around this time, the quantity of CED from domestic corporations increased, this could be related to the decline in the percentage of Type 5 disclosures. It may also be worthy to note that the portion of Type 5 disclosures appeared to decline further after 2013, which was the year the Indian government released the updated Companies Act that outlined the required implementation of CSR reporting. Results are insufficient to suggest if there is a relationship between the two. However, previous research on the topic showed that in China mandatory environmental disclosure improved quality (Wang *et al.* 2017), meanwhile Doedhar

(2016) predicted that India's mandatory CSR may reduce the quality or related initiatives, this is a potential area for future research.

Trends among the quality of CEDs from I-MNC show that Type 4 and 5 disclosures decreased over the timeframe studied, indicating a decline in high-quality disclosures. Meanwhile, the percentage of Type 1 disclosures increased slightly. The decrease in both high-level quality disclosures suggests that the bulk of information that has been added as the quantity of CED has increased is of a low quality, thus bringing down the overall percentage of high-quality information.

Results from P-MNC show that while P-MNCs have experienced that largest growth in the quantity of all the corporations studied, the quality of disclosures remains the most consistent. This indicated that, while there was an increase in the amount of information published, P-MNC corporations are balancing the amount of high- and low-quality disclosures and not simply adding low-quality disclosures for the sake of added quantity.

2.4.2 Significance of Standardization

In order to determine the level of standardization of CED reporting across the three corporate categories, a repeated measures ANOVA analysis was performed to examine the significance between publication year and corporation category for each parameter. Using a repeated measures analysis accounts for an individual corporation's change over time, while analyzing the significance of the corporate category. This is done to account for the lack of independence between these two variables. From the results, it is possible to observe if there is a statistically significant interaction between the publication year and the category of the corporation, as well as if the publication year or corporation category independently have a significant effect on the parameter measured.

Table 6. *Quality type by percent for CEDs from domestic corporations (Coromandel, Rallis India Ltd, United Phosphorus and Zuari), I-MNC (I-BASF, I-Bayer Cropscience, I-Monsanto, I-Syngenta) and P-MNC (P-BASF, P-Bayer Cropscience, P-Monsanto and P-Syngenta) for the years 2002-2016.*

Corporation	Type	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Coromandel	1	48.51	44.34	39.33	43.75	37.50	36.96	46.43	40.00	44.55	44.44	13.21	22.78	36.84	14.13	22.39
	2	23.76	34.91	39.33	18.75	17.50	8.69	8.93	20.00	26.73	23.33	45.28	43.04	51.32	68.48	52.60
	3	9.91	5.66	3.37	4.17	2.50	4.35	1.79	8.33	7.92	7.78	7.54	30.38	6.58	3.26	10.94
	4	3.96	3.77	1.12	2.08	5.00	17.39	8.93	0.00	1.98	1.11	3.77	3.80	5.26	14.13	12.50
	5	13.86	11.32	16.85	31.25	37.50	32.61	33.93	31.67	18.81	23.33	30.79	0.00	0.00	0.00	1.56
Rallis India Ltd	1	46.07	42.62	32.76	34.54	27.78	27.64	30.68	33.14	41.57	42.55	34.62	26.43	53.41	23.43	29.27
	2	7.86	18.03	31.03	29.09	35.18	52.00	46.21	46.80	29.21	28.72	41.35	52.14	40.91	51.43	53.66
	3	6.74	3.28	3.45	1.82	1.85	2.18	2.65	2.03	0.00	3.19	0.00	0.00	0.00	0.00	0.00
	4	0.00	1.64	0.00	0.00	0.00	0.00	0.76	1.74	1.12	2.12	1.92	5.00	3.41	24.00	15.12
	5	39.33	34.43	32.76	34.54	35.18	18.18	19.70	16.28	28.09	23.40	22.11	16.43	2.27	1.14	1.95
United Phosphorus Ltd (UPL)	1	77.27	61.67	41.79	28.38	36.14	35.89	40.00	33.75	35.85	36.84	62.59	48.09	63.64	50.96	54.30
	2	18.18	23.33	29.85	41.89	30.12	32.05	26.25	31.25	30.19	32.63	16.79	28.24	15.38	39.42	18.01
	3	0.00	1.67	5.97	1.35	8.43	3.85	0.00	0.00	7.55	3.16	0.00	0.00	0.69	0.00	17.74
	4	000	1.67	0.00	1.35	1.20	0.00	0.00	0.00	0.00	1.05	2.29	6.87	2.79	3.85	7.79
	5	4.54	11.67	22.39	27.02	24.09	28.20	33.75	35.00	26.41	26.31	18.32	16.79	17.48	5.77	2.15
Zuari	1	24.24	19.04	18.51	20.83	18.36	18.86	21.15	23.21	23.88	22.41	22.75	27.12	22.16	30.19	22.42
	2	4.54	11.11	5.56	9.72	8.16	7.54	9.61	16.07	23.88	22.41	12.16	8.47	15.13	16.34	3.33
	3	6.06	4.76	12.96	16.67	0.00	3.77	5.77	5.36	5.97	10.34	22.22	5.08	21.62	20.79	9.69
	4	3.03	7.94	1.85	0.00	2.04	5.66	5.77	1.78	2.98	0.00	4.76	3.39	7.02	4.95	2.42
	5	62.12	57.14	61.11	52.78	71.43	61.15	57.69	53.57	43.28	44.83	38.09	55.93	34.05	27.72	32.12
I-BASF	1	40.00	34.25	36.76	38.89	40.63	32.88	34.38	30.93	38.46	36.36	68.22	66.67	59.15	63.74	64.42
	2	30.00	41.10	47.06	31.94	42.19	39.73	42.71	48.45	39.23	30.30	9.35	2.47	8.45	9.89	22.09
	3	3.33	0.00	0.00	2.78	0.00	10.96	0.00	2.06	5.38	6.06	1.87	0.00	0.00	0.00	3.07
	4	0.00	0.00	0.00	4.17	0.00	0.00	2.08	3.09	2.31	2.53	0.93	0.00	2.82	0.00	0.61
	5	26.67	24.66	16.18	22.22	17.19	16.44	20.83	15.46	14.62	24.75	19.63	30.86	29.58	26.37	9.82
I-Bayer Cropscience	1	43.75	35.85	39.78	46.23	38.67	32.91	32.98	34.07	34.00	42.35	58.82	51.56	69.44	71.93	70.47
	2	16.67	9.43	20.43	20.75	29.33	22.78	32.98	26.37	30.00	29.41	14.12	15.63	4.17	5.26	20.81
	3	10.42	30.19	19.35	9.43	8.00	10.13	4.26	4.40	14.00	9.41	0.00	0.00	4.17	3.51	4.03
	4	16.67	9.43	8.60	4.72	1.33	0.00	1.06	5.49	4.00	0.00	3.53	1.56	1.39	1.75	2.01
	5	12.50	15.09	11.83	18.87	22.67	34.18	28.72	29.67	18.00	18.82	23.53	31.25	20.83	17.54	2.68
I-Monsanto	1	66.67	55.22	50.68	46.03	52.83	52.27	41.54	48.04	51.16	47.37	61.84	54.64	0.00	67.57	64.54
	2	20.37	16.42	30.14	17.46	16.98	15.91	32.31	34.64	32.56	32.89	14.47	13.40	0.00	16.22	17.02
	3	1.85	5.97	4.11	9.52	1.89	0.00	4.62	3.35	4.65	13.16	0.00	5.15	0.00	2.70	7.09

	Type	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
	4	3.70	2.99	1.37	11.11	1.89	0.00	4.62	6.70	3.10	6.58	2.63	2.06	0.00	3.60	6.38
	5	7.41	19.40	13.70	15.87	26.42	31.82	16.92	7.26	8.53	0.00	21.05	24.74	0.00	9.91	4.96
I-Syngenta	1	60.53	65.79	52.63	54.55	n/a	n/a	64.71	62.22	40.48	52.00	n/a	58.75	68.09	74.60	65.00
	2	5.26	5.26	15.79	9.09	n/a	n/a	2.94	13.33	19.05	20.00	n/a	11.25	4.26	4.76	25.00
	3	0.00	0.00	0.00	0.00	n/a	n/a	0.00	0.00	9.52	6.00	n/a	1.25	2.13	1.59	1.67
	4	5.26	0.00	2.63	3.03	n/a	n/a	0.00	0.00	4.76	0.00	n/a	6.25	8.51	6.35	1.67
	5	28.95	28.95	28.95	33.33	n/a	n/a	32.35	24.44	26.19	22.00	n/a	22.50	17.02	12.70	6.67
P-BASF	1	34.30	36.45	35.71	30.79	43.63	46.65	43.10	45.22	44.75	42.06	41.78	41.65	40.52	31.36	32.36
	2	46.52	40.13	37.64	39.95	29.16	29.56	37.30	34.78	34.42	35.33	30.17	32.32	31.38	41.69	37.24
	3	11.71	13.04	13.19	12.47	15.55	13.16	12.23	11.83	10.33	11.40	7.35	3.05	6.03	7.63	8.78
	4	1.70	4.01	6.32	6.62	3.24	2.54	2.98	2.96	3.80	3.55	6.38	8.98	7.93	6.95	8.94
	5	5.77	6.35	7.14	10.18	8.42	8.08	4.39	5.22	6.70	7.66	14.31	14.00	14.14	12.37	12.68
P-Bayer Cropscience	1	34.88	45.00	37.69	43.34	37.28	39.44	43.59	43.08	38.78	30.32	42.75	41.54	36.06	35.40	34.22
	2	53.49	47.50	25.24	32.97	36.87	39.91	35.09	34.88	34.78	44.93	36.27	32.88	37.65	39.31	40.07
	3	2.33	0.00	13.15	8.21	9.25	9.80	10.80	10.08	14.00	9.36	5.69	5.14	3.70	3.76	2.50
	4	0.00	0.00	2.19	5.79	6.12	6.07	4.68	5.43	4.00	6.47	7.49	9.07	9.25	8.09	8.35
	5	9.30	7.50	21.74	9.69	10.48	4.78	5.83	6.53	8.44	8.92	7.80	11.37	13.34	13.44	14.86
P-Monsanto	1	41.38	32.89	37.74	29.43	36.48	39.70	56.04	36.17	32.66	30.31	36.42	42.81	32.74	36.98	36.23
	2	44.83	47.37	45.28	40.07	39.31	34.67	32.97	37.50	37.69	44.98	37.96	38.49	42.26	37.60	33.38
	3	13.79	7.89	5.66	14.54	10.69	13.82	6.59	8.51	9.05	13.51	5.97	11.51	11.29	9.86	12.27
	4	0.00	6.58	6.60	4.96	3.14	2.51	3.30	2.66	3.77	3.79	8.29	6.47	6.77	5.55	8.56
	5	0.00	5.26	4.72	10.99	10.38	9.30	1.10	15.16	16.83	7.41	11.37	0.72	6.94	10.02	9.56
P-Syngenta	1	51.15	41.50	32.73	38.79	23.26	26.84	35.27	41.39	35.74	37.21	40.75	35.21	34.02	35.18	31.81
	2	37.31	43.54	55.76	45.79	47.67	49.85	31.78	21.98	28.16	30.62	21.13	27.46	35.19	31.41	32.82
	3	6.54	4.76	4.85	8.41	15.89	7.37	2.71	1.47	3.97	2.71	1.89	3.17	3.52	6.03	4.58
	4	5.00	4.08	3.03	2.34	5.04	5.01	7.36	2.56	2.17	3.49	9.06	4.58	6.16	7.04	9.92
	5	0.00	6.12	3.64	4.67	8.14	10.91	22.87	32.60	29.96	25.97	27.17	29.58	21.11	20.35	20.87

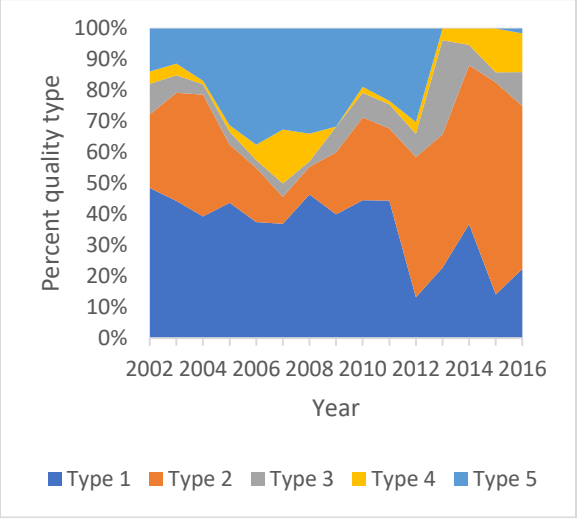

Figure 9. Quality composition of disclosures from Coromandel from 2002-2016. Type 1(p=0.003128), Type 2 (p=0.011438), Type 3 (p=0.229464), Type 4 (p=0.236308), Type 5 (p=0.067912)

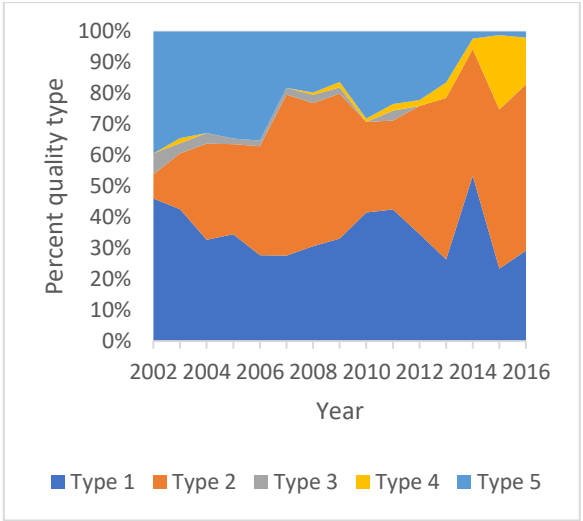

Figure 10. Quality composition of disclosures from Rallis India Ltd from 2002-2016. Type 1 (p=0.495358), Type 2 (p=0.00222), Type 3 (p=0.00024), Type 4 (p=0.005455), Type 5 (p=8.65E-06)

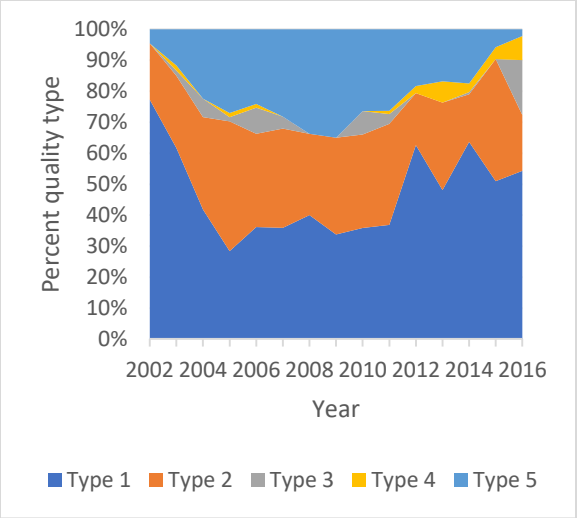

Figure 11. Quality composition of disclosure from UPL from 2002-2016. Type 1 (p=0.872292), Type 2 (p=0.635764), Type 3 (p=0.462509), Type 4 (p=0.003868), Type 5 (p= 0.416638)

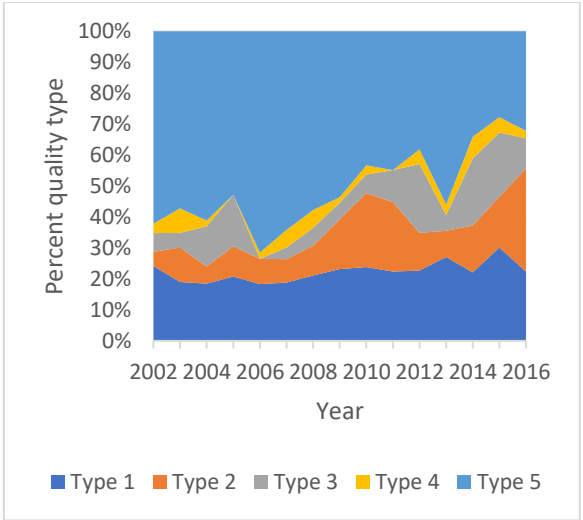

Figure 12. Quality composition of disclosure from Zuari from 2002-2016. Type 1 (p=0.02035), Type 2 (p= 0.005926), Type 3 (p=0.097645), Type 4 (p=0.787839), Type 5 (p=0.000238)

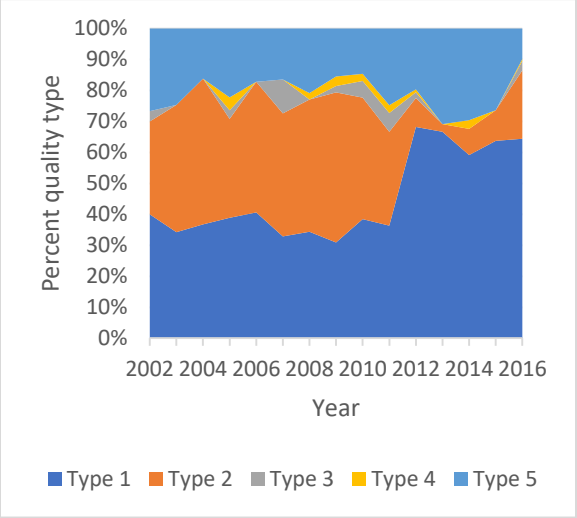

Figure 13. Quality composition of disclosure from I-BASF from 2002-2016. Type 1 (p=0.001141), Type 2 (p=0.004024), Type 3 (p=0.83187), Type 4 (p= 0.701068), Type 5 (p=0.913945)

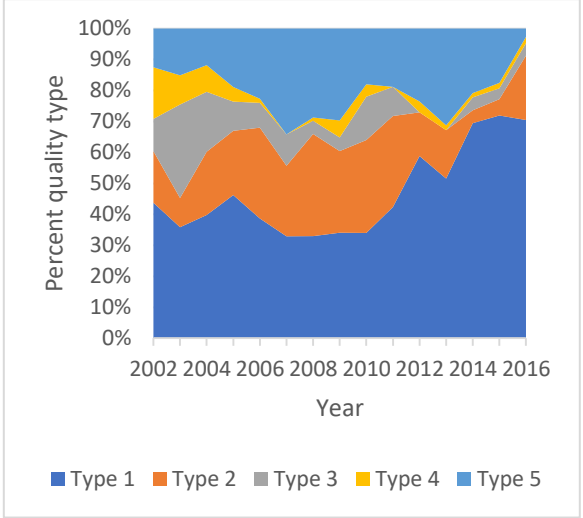

Figure 14. Quality composition of disclosure from I-Bayer from 2002-2016. Type 1 (p=0.001916), Type 2 (p=0.396966), Type (p=0.005518), Type 4 (p=0.006641), Type 5 (p=0.990807)

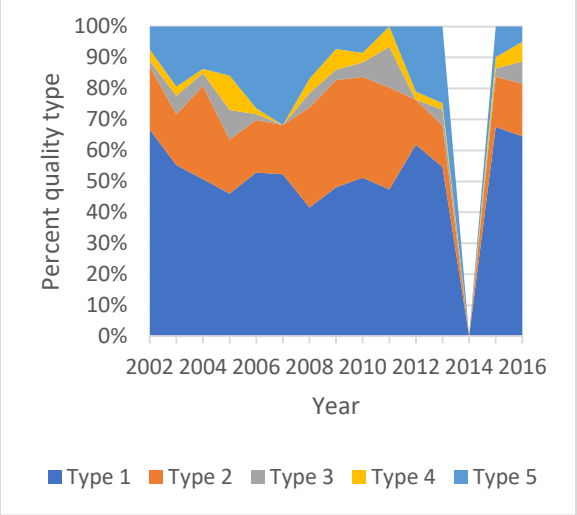

Figure 15. Quality composition of disclosure from I-Monsanto from 2002-2016. Type 1 (p=0.637622), Type 2 (p=0.329595), Type 3 (p=0.996855), Type 4 (p=0.897474), Type 5 (p=0.236979)

Figure 16. Quality composition of disclosure from I-Syngenta from 2002-2016. Type 1 (p=0.573692), Type 2 (p=0.305055), Type 3 (p=0.215392), Type 4 (p=0.239045), Type 5 (p=0.11977)

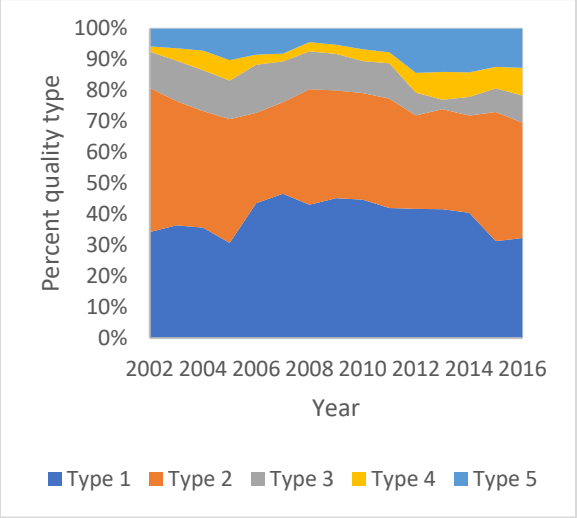

Figure 17. Quality composition of disclosure from P-BASF from 2002-2016. Type 1 (p=0.914266), Type 2 (p=0.213162), Type 3 (p=0.00116), Type 4 (p=0.009394), Type 5 (p=0.00334)

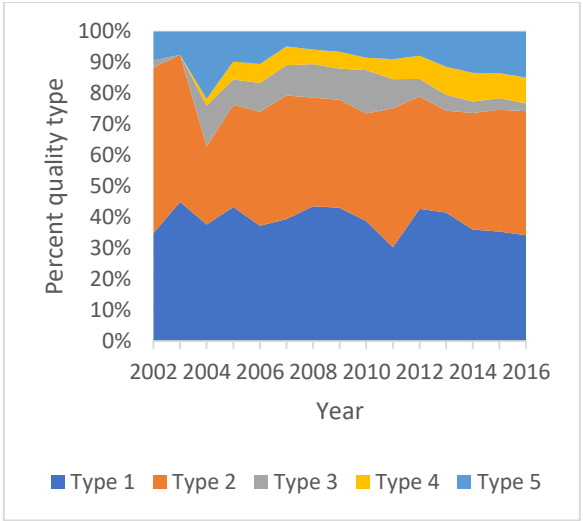

Figure 18. . Quality composition of disclosure from P-Bayer from 2002-2016. Type 1 (p=0.25242), Type 2 (p=0.534258), Type 3 (p=0.55123), Type 4 (p=3.16E-05), Type 5 (p=0.576412)

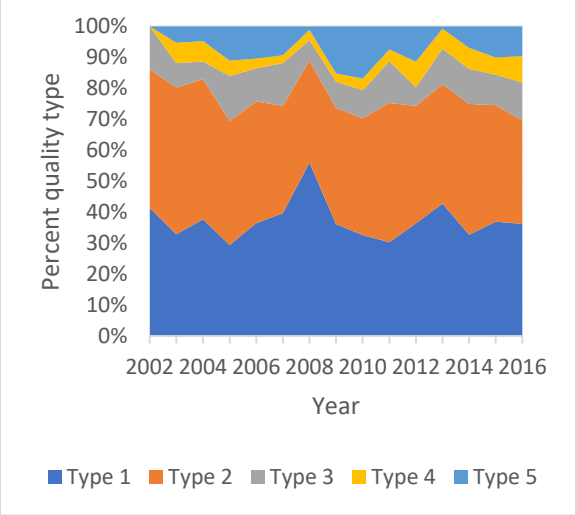

Figure 19. Quality composition of disclosure from P-Monsanto from 2002-2016. Type 1 (p=0.82403), Type 2 (p=0.0595), Type 3 (p=0.926843), Type 4 (p=0.042729), Type 5 (p=0.354159)

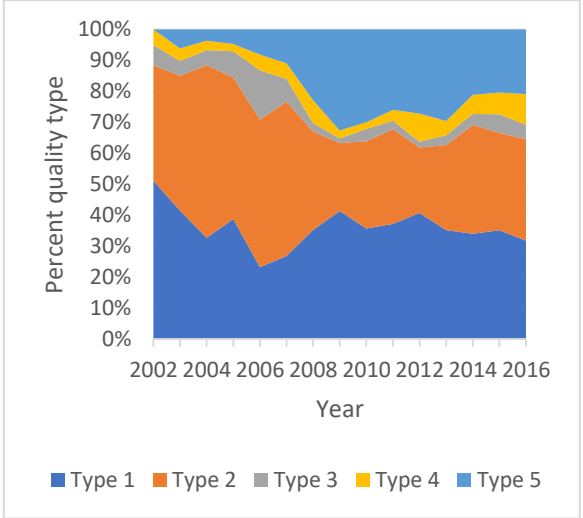

Figure 20. Quality composition of disclosure from P-Syngenta from 2002-2016. Type 1(p=0.345442), Type 2 (p=0.013754), Type 3 (p=0.168384), Type 4 (p=0.038067), Type 5 (p=0.001349)

If the corporation category is a significant factor, this indicates that there is a lack of standardization among the reporting practices of the three corporation categories. In the absence of standardization,

the raw data was consulted to identify where the lack of standardization was most prevalent among the three categories.

2.4.2.1 Diversity

Results for the analysis of the interaction between year and corporation category on CED diversity showed that there was not a statistically significant interaction ($p= 0.5781$). Results from the main effects show that there is statistical significance for the effects of corporation category ($p= <0.0001$) and year ($p= 0.0007$). This indicates that the year and corporation category both significantly affect the diversity of CEDs, while the lack of interaction indicates that the difference between year and corporation category has not significantly changed.

Therefore, it can be concluded that the category of a corporation is a significant factor influencing the diversity of that corporations' CEDs and this has not lessened over time. Knowing that the diversity of CEDs from the three corporation categories is not standardized and observing the data in figure 4, it can be seen that the diversity of domestic corporations and I-MNCs are similar to one another, while P-MNC is much different. Therefore, in the absence of standardization, I-MNC disclose more similarly to local corporations rather than the parent corporation.

2.4.2.2 Quantity

Results for the analysis of the interaction between year and corporation category on CED quantity showed that there was not a statistically significant interaction ($p= 0.6183$). Results from the main effects show that there is statistical significance for the effects of corporation category ($p= <0.0001$) and year ($p= <0.0001$) on CED quantity.

From the above, it can be determined that the quantity of disclosures in a CED report is significantly affected by the year of publication and the category of the corporation. Additionally, because the interaction between the year and corporation category is not significant, it can be interpreted that the

corporation category has been a significant factor over the entirety of the timeframe. Again, in the absence of standardization, I-MNC disclose more similarly to local corporations rather than the parent corporations.

2.4.2.3 Quality

2.4.2.3.1 Type 1

Results for the analysis of the interaction between the year and corporation category on CED quality Type 1 showed that there was not a statistically significant interaction between the year and corporation category (p= 0.6961). Results from the main effects show that there is statistical significance for the effects of corporation category (p= <0.0001) and year (p= <0.0001) on CED quality Type 1. In the case of Type 1 disclosures, raw data suggest that, in accordance with a lack of standardization, domestic corporations (2002: 44.2%, 2016: 36.6%) are more similar to P-MNC (2002:39.3%, 2016: 33.9%) than to I-MNC (2002: 52.0 %, 2016: 66.3%).

2.4.2.3.2 Type 2

Results for the analysis of the interaction between the year and corporation category on CED quality Type 2 showed that there was not a statistically significant interaction between the year and corporation category (p= 0.2201). Results from the main effects show that there is statistical significance for the effects of corporation category (p= <0.0001) and year (p= 0.0010) on CED quality Type 2. In 2002, the percentage of Type 2 disclosures from domestic corporations (2002: 13.7 %, 2016: 35.7%) seemed to more closely relate to I-MNCs (2002:19.5%, 2016: 20.7%), but by 2016 was more similar to P-MNCs (2002: 44.2% 2016: 36.0%).

2.4.2.3.3 Type 3

Results for the analysis of the interaction between the year and corporation category on CED quality Type 3 showed that there was not a statistically significant interaction between the year and

corporation category (p= 0.9230). Results from the main effects show that there is statistical significance for the effects of corporation category (p= <0.0001) but not the year (p=0.1647) on CED quality Type 3. Type 3 quality disclosure appeared to be more similar between domestic corporations (2002: 7.2%, 2016: 11.0%) and P-MNCs (2002: 9.9%, 2016: 7.5%) than to I-MNC (2002: 4.0%, 2016: 4.3%).

2.4.2.3.4 Type 4

Results for the analysis of the interaction between the year and corporation category on CED quality Type 4 showed that there was a statistically significant interaction between the year and corporation category (p= 0.0015). Results from the main effects show that there is statistical significance for the effects of corporation category (p= <0.0001) and year (p= <0.0001) on CED quality Type 4. For Type 4 quality disclosures, domestic corporations (2002: 2.2%, 2016: 9.4%) follow a more similar trend to P-MNC (2002: 2.5%, 2016: 8.8%) than to I-MNCs (2002: 6.0%, 2016: 2.7 %).

2.4.2.3.5 Type 5

Results for the analysis of the interaction between the year and corporation category on CED quality Type 5 showed that there was a statistically significant interaction between the year and corporation category (p= 0.0015). Results from the main effects show that there is statistical significance for the effects of corporation category (p= <0.0001) and year (p= 0.0023) on CED quality Type 5. For Type 5 quality disclosures, domestic corporations (2002: 32.7%, 2016: 7.3%) disclose in a way that is more similar to I-MNCS (2002: 18.5%, 2016: 6.0%) than P-MNCs (2002: 4.1%, 2016: 13.7%).

2.4.2.3.5 Overall

In the results for quality Types, 1 and 2 both the main effects are statistically significant, while the interaction between effects is not. For quality Type 3, neither the interaction nor the year is significant factors. However, the effect of the corporation category remains statistically significant. Quality Type 4 and 5 show a different trend; for these factors both the main effects and the interaction is significant,

suggesting that while the year and corporation category have a significant effect on the portion of high-quality disclosures this difference may be changing over time. While results show that there is a statistically significant difference between the quality proportions of disclosures from the three types of corporations, analysis of the data trends are inconclusive as to whether domestic corporations are reporting in accordance with local norms and practices or in line with their parent corporation.

2.5 Discussion

This study aimed to identify significant changes in the CEDs from three categories of corporations over the span of fifteen years. The purpose was to identify if corporations were continuing to improve the diversity, quantity, and quality of their CEDs over time. Since CED is a relatively new area of reporting, only gaining momentum in the last 40 years (Lin, 2008), examining a timeframe of fifteen years can provide deep insight into the continued development of reporting practices.

The results partially support hypothesis 1a and fully support hypothesis 1b, which stated:
H1a: Each corporation categories studied will increase the diversity of environmental disclosures over the timeframe examined.

H1b: Each corporation categories studied will increase the quantity of environmental disclosures over the timeframe examined.

The reason hypothesis 1a was only partially supported is that while all corporations showed a trend of increasing diversity, only two of the corporation categories; P-MNCs and domestic corporations, showed a statistically significant increase in diversity. I-MNCs also showed an increase in diversity of CEDs, but this was not statistically supported overall, despite being statistically significant for two of the four corporations within the category. All corporation categories showed a statistically significant increase in the quantity of CEDs for the fifteen-year timeframe and all were found to be statistically significant.

Legitimacy theory provides insight as to why the diversity and quantity of disclosures increased over time. Legitimacy theory, as discussed in section 2.5, states that corporations disclose to meet the expectations of society in order to maintain or obtain corporate legitimacy (Ashford & Gibbs, 1990; Dowling & Pfeffer, 1975; Suddaby *et al*., 2017). Public awareness of corporate environmental impacts has increased over the years, in turn increasing the expectations of society for enhanced corporate responsibility (Alrazi *et al*., 2015). When society's expectations are higher, corporations will have to increase disclosure in order to maintain legitimacy. Increased disclosure suggests that corporations are perceiving higher expectations from the society in which they operate and responding to the diversity and quantity of their disclosures.

If we accept this explanation, the next point of interest would be the increased rate at which P-MNCs responded in comparison to the other two corporate categories. In terms of diversity, all categories began the timeframe with reasonably similar scores in 2002 (domestic: 10, I-MNC: 9.25 & P-MNC: 11). However, P-MNCs increased the diversity of their CEDs at a rate that was higher than I-MNCs and domestic corporations. The increase in CEDs by P-MNCs is consistent with the expectations of the literature, which has shown growing levels of reporting amongst large corporations (Ali *et al*., 2017; Lu & Abeysekera, 2014; Ortas et al., 2014). One possible explanation for this may be society's increasing expectations for reporting. Given the relatively high public visibility of many P-MNCs, they may be more susceptible to public pressure to enhance reporting (Ali *et al.,* 2017; Ortas *et al*., 2014.

Another possible explanation could be that, although all corporations were exposed to increased societal expectations for CEDs, only the P-MNCs had the resources to respond (or, at least, they had more resources to respond than did the other two categories of corporations)(Qiu *et al.,* 2016; Lu & Abeysekera, 2014; Ortas *et al*., 2014). I-MNCs and domestic corporations failed to report on diversity categories related to the interests of local stakeholders, such as pressure groups (PRESS), information retrieval process (IRP), and pollution (POLL). This indicates that there may be a lack of expectation for

these types of disclosures in the society that I-MNCs and domestic corporations are operating in. This is not completely unexpected, as the education and general awareness level of environmental impacts of the public in Indian societies are not as high as North American or European societies (Ali *et al*., 2017). Ali *et al.* (2017) state that corporations in developing countries are less influenced by local stakeholders and more by an external stakeholder, who would have less interest in disclosure focused on local concerns.

Quantity revealed the same trend, i.e. that P-MNCs increased their quantity at a higher rate then I-MNCs and domestic corporations. However, in this scenario, P-MNCs also had higher CED quantity at the beginning of the timeframe. Quantity or volume is a common measurement used in CED research and past studies have shown the quantity of CEDs to increase over time (Gibson & O'Donovan, 2007) and that corporations in developing countries tend to have fewer CEDs (Momin, 2006)

Hypothesis 1c was not supported by the results of this study, which stated the following:

H1c: Each corporation categories studied will increase the quality of environmental disclosures over the timeframe examined.

Results from the regression analysis were inconclusive regarding the quality of CEDs over time. Individually, corporations showed a significant increase or decrease in certain quality types. However, these individual trends were not consistent across all corporations in a category. This would be an interesting aspect for future research, perhaps on a larger sample size.

A secondary aim of this study was to assess the standardization of reporting practices across the corporate categories. As previously discussed, standardization of environmental disclosures within a multinational corporation leads to many benefits, through improved corporate legitimacy, including higher profits, better stock prices, lower pressure from non-government organizations and reduced liability of foreignness (Arora & Lodhia, 2017; Cho & Patten, 2007; Hunter & Bansal, 2006). In addition to

benefits within the corporation itself, increased standardization among corporations can lead to better information for stakeholders and investors. Standardization will also likely be a goal when designing future disclosure requirements (KPMG, 2017). Therefore, understanding how corporations are reporting now within the different categories will help to inform the future decision regarding regulation.

Results from this analysis revealed support for hypothesis 2a and 2b, which stated:

H2a: The diversity of environmental disclosures of P-MNCs and I-MNCs will lack standardization, and the environmental disclosures of I-MNCs will be more similar to those of domestic corporations than the P-MNC.

H2b: The quantity of environmental disclosures of P-MNCs and I-MNCs will lack standardization, and the environmental disclosures of I-MNCs will be more similar to those of domestic corporations than the P-MNC.

Results from the two-way repeated measures ANOVA indicated that corporate category was a significant factor affecting the diversity and quantity of the CEDs. Further examination of the data reveals that domestic corporations and I-MNCs have the most similar CED reporting practices, while the reporting practices of P-MNCs differ. This suggests that I-MNCs follow localized reporting norms, which was also the key conclusion in Wilson (2013).

Although the quality was found to be significantly affected by the corporation category by the ANOVA analysis, it could not be determined conclusively that the I-MNCs were reporting more similarly to domestic corporations. This is because the disclosure quality of domestic corporations appeared to relate more similarly to P-MNCs. Therefore, the results did not support H2c, which states:

H2c: The quality of environmental disclosures of P-MNCs and I-MNCs will lack standardization, and the environmental disclosures of I-MNCs will be more similar to those of domestic corporations than the P-MNC.

The lack of standardization within the reporting practices of different categories of corporations also fits within the framework of legitimacy theory. Previous research has found conflicting results on the influence of foreign ownership on CEDs. Results from this study, however, suggest that having foreign ownership does not significantly influence CEDs. Based on the framework provided by legitimacy theory, two categories of corporations will disclose similarly if they are experiencing similar societal expectation. The corporations do this to appease relevant stakeholders and ensure their own corporate success by acquiring legitimacy. If two corporate categories are not exposed to the same societal expectations, they will not disclose in a standardized way because they do not need to in order to acquire the same legitimacy. Subsidiaries are a special case because these corporations are influenced by the same society as domestic corporations but also have the potential to be influenced by their parent corporations and the stakeholders that become involved when a corporation has foreign ownership, such as investors, international consumers, and potentially certification bodies.

Results found that I-MNCs reported more similarly to domestic corporations showing the disclosure practices are localized not standardized. This indicates being a subsidiary of a multinational corporation did not significantly influence the societal expectations for these corporations and that I-MNCs and domestic corporations are exposed to similar societal expectations from the public, government, customers, and other domestic stakeholders. Had the I-MNCs been found to disclose in a way that was more similar to P-MNCs this would have suggested that expectations for these corporations were higher than those for domestic corporations.. This means that these two categories of corporations are exposed to similar societal expectations from the public, government, customers, and other domestic stakeholders. However, in the future, as globalization continues to increase, it may be seen that both

domestic and I-MNC increase the diversity and quantity of CEDs to be more comparable to those of P-MNCs.

This study has looked at the theoretical framework of legitimacy theory, specifically legitimacy-as-property as defined by Suchman (1995). In this perspective, organizations acquire legitimacy from society (Suddaby *et al.,* 2017). The generalized response from corporations in this study over time was to increase the diversity and quantity of their CEDs in an attempt to maintain their possession of legitimacy. The lack of standardization or generalization, as defined by Suchman (1995), between corporations in the three different categories indicates that corporations are likely operating in systems of different norms. To this point Suddaby *et al.* (2017, pg. 457) state, "Complying with social pressures of legitimacy enhances the survivability of an organization and, as a result, creates a high degree of similarity among organizations in a common organizational field". This helps explain why greater standardization was observed between domestic corporations, as they were operating in the same organizational environment.

2.6 Conclusion

This study found that, over a period of fifteen years, all corporations had significant changes in the quantity of CEDs. P-MNC and domestic corporations had significant changes in diversity. As well, the portion of the quality type in CEDs was inconclusive, though there were instances of statically significance. Results also showed that the corporation category was a significant factor affecting the diversity, quantity, and quality, indicating that there is a lack of standardization among the reporting practices of the different categories of corporations. The results further suggest that in terms of diversity and quantity, subsidiary corporations conform more to localized reporting practices. The results were inconclusive for the analysis of quality.

This research is significant because it addressed environmental disclosures of foreign subsidiaries, with both domestic corporations and parent corporations for context, providing an efficient means to measure standardization. Standardization of environmental disclosure in multinational corporations has been shown to improve corporate policy, auditing, performance targets, better satisfy stakeholders and reduce the liability of foreignness (Hunter & Bansal, 2007; Christmann, 2004). Improved CEDs can provide better insight into the operations, environmental initiatives, and auditing of agrochemical corporations. As previously established, the agrochemical industry has the potential to be particularly dangerous to both the environment and human health (Aktar *et al.*, 2009). As well, comprehensive disclosures have the potential to improve policy and auditing within the corporation, although there is no confirmed correlation with environmental performance (Meng *et al*., 2014; Hunter & Bansal, 2007; Christmann, 2004; Hughes *et al*., 2001). This research provides insight into whether or not multinational corporations are implementing comprehensive disclosure practices throughout the entirety of their operations. The results can also be used to inform decisions to implement programs to improve environmental disclosure in multinational corporations or in developing countries. Additionally, this study is believed to be one of the first to analyze corporate environmental disclosure of single multinational corporations operating in different countries.

This study contributes to both academic research and policy, but limitations must also be considered. In this research, a limited sample size was used due to the use of manual coding, which is highly intensive. Furthermore, the content analysis itself has limitations, such as being limited to available materials and sample size due to the time-consuming nature, and debates are ongoing over the reliability of content analysis methods. Efforts to increase the reliable use of content analysis in this study included coder practice and inter and intra- coder reliability testing.

Regardless, this study does offer valuable insights into the CED practices of multinational, subsidiary, and domestic corporations and provides a foundation for future research. Such research could include

exploring the motivations for aligning multinational and subsidiary CEDs. Although motivations for environmental reporting have been widely studied, there is less research specifically focused on understanding how stakeholder influences differ based on the location of operation and how this impacts the results of environmental disclosure by multinationals operating in multiple countries. Additionally, researchers have highlighted the need for further research on the quality of CEDs. Although the results from this study were inconclusive regarding the quality of the CEDs, future research featuring a larger sample size may produce significant results.

Appendices

Appendix A: Extended Methodology

A.1 Corporation Selection

Table A. 1: Profiles of Corporations Selected for Research

Category	Corporation	Location	Revenue for FY16*	Number of Employees for FY16
Parent Multinational	Monsanto Corporation	USA	13,502	20,800
	BASF SE	Germany	57,550	113,830
	Bayer Cropscience AG	Germany	46,769	115,200
	Syngenta AG	Switzerland	12,790	27,810
Subsidiary Multinational	Monsanto India Ltd	India	123.7	268
	BASF India Ltd	India	10,232.94	1,868
	Bayer Cropscience Ltd (India)	India	5460.00	1,126
	Syngenta India Ltd	India	440.56	Not disclosed
Domestic	Rallis	India	330.18	952
	Coromandel	India	2,164.81	4,309
	Zuari	India	728.24	727
	United Phosphorus	India	3141.11	3,489

* In USD in millions

A.2 Document Selection

Corporations can publish environmental information in many ways and through several forms of media, including annual reports, standalone reports, web pages, media, etc. For the purpose of this research, information that is published by the company in either annual reports or standalone sustainability reports will be analyzed. For the companies selected, many publish only annual reports which typically have environmental information integrated; others publish an annual report and a sustainability report [Table A.2]

Only publicly available information was collected, typically through the company's webpage. In some instances, links to sustainability reports were faulty or missing, in these cases a request was sent to the company via email. If companies were able to provide the report, it was included, otherwise reports not readily accessible to the public were not included. An overview of sustainability reports included in the analysis is featured in Table A.3. Additionally, standalone reports not pertaining to environment or sustainability, for example, compensation reports, were not included.

Table A. 2: Length of annual reports published by selected corporations in number of pages

	2012	2013	2014	2015	2016
P-BASF	244	252	276	262	260
P-Syngenta	70	72	68	72	74
P-Monsanto	110	109	114	109	118
P-BayerCrop Science	285	351	340	361	344
I-BASF	72	64	88	92	120
I-Syngenta	N/A	88	120	112	156

	2012	2013	2014	2015	2016
I-Monsanto	96	100	126	132	148
I-BayerCrop Science	70	78	96	108	135
United Phosphorus	188	184	107	228	167
Rallis Chemical	128	144	168	181	265
Coromandel	116	140	164	172	244
Zuari	128	126	159	176	218

Table A. 3: Overview of Standalone sustainability reports published by corporations indicated by page length

	2012	2013	2014	2015	2016
P-BASF	N/A	N/A	N/A	N/A	N/A
P-Syngenta	N/A	N/A	N/A	N/A	N/A
P-Monsanto	153	26+19*	168	117	129
P-BayerCrop Science	110	N/A	N/A	N/A	N/A
I-BASF	N/A	N/A	N/A	N/A	N/A

	2012	2013	2014	2015	2016
I-Syngenta	N/A	N/A	N/A	N/A	N/A
I-Monsanto	N/A	N/A	N/A	N/A	N/A
I-BayerCrop Science	N/A	N/A	N/A	N/A	N/A
United Phosphorus	N/A	Not available †	Not available †	Not available †	96
Rallis Chemical	N/A	N/A	N/A	N/A	N/A
Coromandel	N/A	N/A	N/A	N/A	N/A
Zuari	10	N/A	10	11	12

*In 2013 P-Monsanto published spring and fall sustainability reports

N/A indicates a lack of publication

† United Phosphorus' website indicates there are sustainability reports for these years, however the links are faulty, United Phosphorus did not respond to requests for these reports.

A.3 CONI coding steps

CONI is unique because it allows the user to rate a unit, in this case, a sentence, on three criteria at once. CONI measures the diversity, quality and quantity of a document by recording the category of disclosure, the quality of the information, and the overall amount of relevant information. The unit for measurement in this method is a sentence, therefore any sentence containing relevant corporate environmental disclosure (CED) will be analyzed according to the following steps.

A.3.1 Diversity Coding

The first step in the process is to determine the diversity category best suited to the relevant sentence. Beck *et al.* (2010) initially developed 12 Categories and 48 sub-categories for diversity coding. This study, however, will use the adapted categories developed by Wilson (2013), which features 18 categories and 59 sub-categories [Table A.4]. All sentences containing CED information are classified into a category and sub-category based on the overall meaning of the sentence. If the coder is unable to determine a singular meaning for the sentence then the sentence will be classified based into the category relevant to the first point made in the sentence.

Table A. 4: Category and sub-category of diversity coding with examples

Category	Sub-Category	Example
GEN: General environmental information	1: Any general mention, including the use of keywords, i.e., environment, nature, climate, etc.	"As the world's leading chemical company, we combine economic success with environmental protection and social responsibility." (BASF Annual report, 2016, pg. 19)
	2: Aims, mentioning environmental goals, aims or commitments	"We set ourselves ambitious goals with voluntary commitments and monitor our performance in terms of the environment, health and safety using our Responsible Care Management System." (BASF Annual report, 2016, pg. 24)
	3: Management Systems & Processes	"The Company continues its environment and safety initiatives and has successfully implemented internationally recognized Environment & Safety Standards and is an ISO 14001: 2004 and OHSAS 18001:2007 certified organization." (Zuari Annual Report, 2016, pg. 5)
	4: Disclosure guidelines, including GRI	"The Bayer Group's sustainability reporting is aligned to the g3.1 guidelines of

Category	Sub-Category	Example
		the Global Reporting Initiative (GRI) and the ten principles of the UN Global Compact (UNGC)." (Bayer Annual report, 2014, pg. 31)
	5: Environmental Initiatives, i.e., REACH, International Chemical Environmental Initiatives (excluding Responsible care)	"REACH is a European Union regulatory framework for the registration, evaluation and authorization of chemicals, and will be implemented gradually until 2018." (BASF Annual report, 2014, pg. 236)
	6: Results from environmental audits, policies, etc., including environmental incidents	"However, looking at the resource intensity – total use per dollar operating income ($EBIT) – we have again observed an overall improvement in our environmental performance." (Syngenta Annual Review 2012, pg. 41)
	7: Long-term policy, goals and/or strategy	"Most importantly, we approach sustainability as a long-term, collaborative effort." (Monsanto CSR Report, 2016 pg. 4)
	8: Continuous Improvement	"We continue to enhance our environmental reporting by improving data quality and adding sites to the reporting scope." (Syngenta Annual Review, 2013, pg. 41)
RES: Those responsible for the environmental behaviour or implementation of activities	1: Top management A. Committee/ department B. Individual/ Membership C. Aims and objectives	A: "It starts at the top with the Sustainability and Corporate Responsibility Committee of our board of directors, which reviews and monitors our sustainability performance." (Monsanto CSR Report, 2014, pg. 13)

Category	Sub-Category	Example
		B: “A 24-year agriculture sector veteran, Dr. Shukla has served successfully in varied roles of increasing responsibility spanning Technology Development, Regulatory, Sales & Customer Service, Sustainability and Corporate Affairs across the India and Asia Pacific regions; he was also the Country Manager of the Monsanto Company’s business in Indonesia where he re-established the Roundup® business and helped lay the foundation for the maize business.” (Monsanto India Annual Review, 2013, pg. 24) C: N/A
	2: Results	“Our newly formed Office of Sustainability is a cross-functional team of employees who have day-to-day responsibilities in core areas of sustainability including stakeholder engagement, food and nutrition security, environmental management, safety, health, supply chain, global policy, business conduct and human rights.” (Monsanto CSR Report, 2014, pg. 13)
	3: Anybody working with the organization, i.e., reference to employees	“For Occupational and process safety as well as health and environmental protection and corporate security, we rely on comprehensive preventative measures as well as on the involvement of all employees and contractors” (BASF Annual

Category	Sub-Category	Example
		Report, 2016, pg. 98)
POLL	1: Air A. Emissions (Actual and Result) B. Action/ Target	A: "[Chart format] Total CO_2 Emissions (000s tonnes); 2014: 1,730, 2013: 1,710, 2012: 1,574." (Syngenta Annual review, 2014, pg. 56) B: "In line with our Group target we are endeavouring to reduce specific greenhouse gas emissions (total emissions divided by the manufactured sales volume) by 20% through 2020." (Bayer Annual Report, 2015, pg. 136)
	2: Water A. Emissions (Actual and Result) B. Action/ Target	A: "A total of 1,644 million cubic meters of water were discharged from BASF production sites in 2016, including 184 million cubic meters of wastewater from production." (BASF Annual report, 2016, pg. 108) B: "In order to avoid unanticipated emissions and the pollution of surface or groundwater, we create water protection strategies for our production sites." (BASF Annual report, 2016, pg. 108)
	3: Waste A. Emitted (Actual and Result) B. Action/ Target C. Recycling (must include the word recycle)	A: "Total waste volume amounted to 2.10 million metric tons in 2016 (+3.7%)." (BASF Annual report, 2016, pg. 110) B: "Waste prevention is our topmost goal." (BASF Annual report, 2016, pg. 110) C: "If waste is unavoidable, we review the options for recycling or energy recovery, using

Category	Sub-Category	Example
		BASF's existing Verbund structures for efficient waste management." (BASF Annual report, 2016, pg. 110)
	4: Land A. Emission (Actual & Result) B. Action/ Target	A: "[Chart format] Total waste; Landfill; FY14 8,600; FY15 7,060" (Monsanto CSR Report, 2015, pg. 76) B: N/A
	5: Emission and Pollution related to products	"In 2016-17, CO2 emissions per tonne of production in UPL manufacturing plants reduced by 22% compared to 2015-16." (UPL Annual Report, 2016)
PROD: Product disclosures	1: Product Stewardship, Life cycle analysis, Packaging	"Our seed and crop protection products are subject to our Life Cycle Stewardship Activities Management Process (LCStAMP)." (Monsanto CSR Report, 2014, pg. 34)
	2: Mention of environmentally friendly products, product production, or application	"The process takes place at room temperature and under normal atmospheric conditions, resulting in energy savings and greater environmental compatibility." (BASF annual report, 2016, pg. 8)
SUST: Sustainability disclosure	1: General mention of sustainability	"As a responsible business corporation, we have built sustainable and effective CSR initiatives that are vital towards fulfilling critical societal needs in the communities we operate in." (Zuari Annual report, 2016, pg. 43)
	2: Commitment to UNCED, Kyoto, External Environmental Rating, etc.	"In November 2015, Monsanto signed the White House American Business Act on Climate Pledge, which affirmed

Category	Sub-Category	Example
		our commitment to climate action and our support for a strong outcome from the United Nations Framework Convention on Climate Change Conference in Paris (COP21) that took place in December 2015." (Monsanto CSR Report, 2015, pg 53)
	3: Biodiversity conservation, habitat and species	"We develop remediation solutions that combine nature conservation, climate protection concerns, costs, and social responsibility." (BASF Annual report, 2016, pg. 110)
	4: Mention of climate change	"As a company entirely devoted to agriculture, we are particularly attuned to the potential effects of climate change including drought, severe weather, rising sea levels, shifting pest infestations, compromised harvests and flooding." (Monsanto CSR Report, 2015, pg. 52)
LIAB: Environmental Liability	1: Financial liability	"During the year provision has been utilised to the extent of Rs. 32 Lacs. It is expected that a significant portion of this provision would be utilised in next financial year and all will have been utilised within five years after the reporting date." (Syngenta Annual Report, 2013, pg. 58)
	2: Disclosure on Balance sheet	"[Chart format] Power, Fuel and water; 2017: 20.352.31 2016: 26045.86" (Zuari, 2016, pg. 90)
	3: Justification for no disclosure	n/a

Category	Sub-Category	Example
ACT: Environmental Activities	1: Staff Training	"The Company has on-going training programs on Environment covering all levels of employees" (UPL Limited Annual report, 2014, pg. 61)
	2: Project Involvement (without partnership)	"The Prince Edward Island Stream Restoration Project in Canada supports stream environments and reduces the risk of soil runoff by planting strips of vegetation along the edges of farm properties and waterways." (Syngenta Annual review, 2014, pg. 13)
	3: Awards	"In addition, BASF was one of 24 companies in 2016, out of a total of 607 assessed by CDP, to receive the top grade of "A" for sustainable water management, putting it among the world's leading enterprises in this area." (BASF Annual report, 2016, pg. 14)
	4: Sponsoring	"Our people were proud to be a co-sponsor with the Howard G. Buffett Foundation of two important farmer workshops on cover crop education." (Monsanto CSR Report, 2012, pg. 103)
	5: Partnerships with environmental organizations (must use word partner/ partnership)	"The Europe-wide standard came into force at the end of 2011 and was developed by nongovernmental organizations, governments and businesses under the direction of the independent organization European Water Partnership (EWP)." (BASF Annual report, 2016, pg. 237)

Category	Sub-Category	Example
BRR: Business Risk	1: Environmental risks related to business	"Major chemicals such as glyphosate (herbicide), atrazine (herbicide), chlorpyrifos (insecticide) and others are constantly under review, facing the risk of being phased out or banned if more environment-friendly alternatives become available." (UPL Limited Annual report, 2014, pg. 37)
	2: Attempts to manage or reduce environmental risks	"We aim to reduce potential risks in the areas of environment, safety and security, health protection, product stewardship, compliance, and labor and social standards by setting ourselves globally uniform requirements that frequently go beyond legal requirements." (BASF Annual report, 2016, pg. 29)
	3: Related costs	"Additionally, during the current year, the Company has recognised the business interruption claim amounting to `2500 lakhs received from the Insurance company on account of the 'Hudhud' cyclone in Vishakapatnam unit." (Coromandel Annual Report, 2015, pg. 123)
PRESS: Pressure Groups	1: Shareholders	"In 2013 we continued our dialogue with current and potential investors who base their investment decisions on ESG criteria." (Bayer Annual report, 2013, pg. 41)
	2: Stakeholders	"The trend toward more sustainability in our customer industries continues. We want

Category	Sub-Category	Example
		to use innovations to take advantage of the resulting opportunities." (BASF Annual Review, 2016, pg. 117)
	3: Government	"With the Government's focus shifting towards improving water and nutrients use efficiency by making higher budgetary allocation towards micro irrigation, Business foresees significant growth opportunities, going forward." (Coromandel Annual Report, 2016, pg. 35)
SER: Separate Environmental Report	1: Separate report references in the annual report	"In addition to our integrated corporate report, we publish further information about sustainability issues online. Links to this supplementary information are provided in each chapter." (BASF Annual Review, 2012, pg. 4)
	2: Contact details	N/A
RC: Responsible Care	Any mention of Responsible Care	"We act responsibly as an integral part of society and have set out the framework for our voluntary commitments in our Responsible Care Management System." (BASF Annual report, 2016. Pg. 96)
ENE: Energy Disclosure	1: Conservation/ energy saving attempts (Goals & Results)	"The Verbund system is an important component of our energy efficiency strategy: Waste heat from one plant's production process is used as energy in other plants." (BASF Annual report, 2016, pg. 105)
	2: Energy use, development and exploration of alternative	"We are exploring the use of renewable energies. These can only become a permanent part

Category	Sub-Category	Example
	energy	of our energy mix if they are competitive in terms of supply security and cost." (BASF Annual report, 2016, pg. 105)
	3: Energy usage	"[Chart format] Energy (TJ); 2014: 9,930, 2013: 10.202, 2012: 9,336" (Syngenta Annual review, 2014, pg. 56)
INP: Resource Input	1: Water Input	"Reduced specific water consumption in FY2016-17 by 6% i.e. achieved 0.59 kL water/kL of product from 0.63 kL water/kL of product." (Monsanto India Annual Report, 2016, pg. 105)
	2: Resource Input, renewable, non-renewable, toxic, etc.	"Sourcing of surfactant for Roundup 41% SL in local tankers in place of HDPE drums. This has helped us reduce HDPE consumption by over 60 MT per annum." (Monsanto India Annual Report, 2016, pg. 105)
SUPP: Supplier Related Disclosure	Mention of sustainable supply chain, environmental requirements and/or supplier compliance	"Both new and existing suppliers are selected and evaluated not only on the basis of economic criteria, but also on environmental, social and corporate governance standards." (BASF Annual report, 2016, pg. 92)
COMP: Compliance Disclosure	1: Compliance with environmental laws, regulations and/or voluntary compliance with initiatives	"Due diligence includes, for example, reviewing risk-relevant factors such as compliance with applicable environmental regulations and occupational health and safety standards at production sites." (Bayer Annual report, 2014, pg. 218)
	2: Non-compliance, including	"In the United States, Bayer is

Category	Sub-Category	Example
	fines and lawsuits	one of numerous parties involved in a series of claims brought by federal and state environmental protection agencies." (Bayer Annual report, 2014, pg. 325)
IRP: Information Retrieval Process	The process to obtain feedback from stakeholders	"The Trust of customers and consumers is essential for the successful introduction of new technologies. That is why we enter into dialog with stakeholders at an early stage of development." (BASF Annual Review, 2016, pg. 118)
OTHER	Disclosure not fitting in the above categories, i.e., transportation, transparency, accountability, etc.	"Transport is handled by logistics service suppliers that are selected according to stringent safety, environmental and quality criteria." (Bayer Annual Report, 2015, pg. 108)
ECE: External Environmental Factors	Mention of weather-related information, including droughts and rainfall but excluding related business risks	"In 2012, the cause was more abrupt, with significant production shortfalls due to weather." (Syngenta Annual Review 2012, pg. 6)

Table A. 5: Classification categories for qualitative coding

Disclosure Type	Example	Explanation
Type 1	"Most importantly, we approach sustainability as a long-term, collaborative effort." (Monsanto CSR Report, 2016 pg. 4)	This sentence is vague and includes no goal or plan for execution; because of this it offers little value and is classified as a Type 1.

Type 2	"In November 2015, Monsanto signed the White House American Business Act on Climate Pledge, which affirmed our commitment to climate action and our support for a strong outcome from the United Nations Framework Convention on Climate Change Conference in Paris (COP21) that took place in December 2015." (Monsanto CSR Report, 2015, pg. 53)	This disclosure offers information beyond a general level, including a specific commitment to and named authority. Note the use of the year does not count as quantitative information and therefore does not make this disclosure appropriate for Type 4 classification; it is instead classified as a Type 2.
Type 3	"The Group's total energy consumption meanwhile was even down 2.8% at 80.8 petajoules." (Bayer Annual report, 2013, pg. 132"	This disclosure offers primarily quantitative information with little narration or explanation.
Type 4	"Additionally, during the current year, the Company has recognized the business interruption claim amounting to `2500 lakhs received from the Insurance company on account of the 'Hudhud' cyclone in Vishakapatnam unit." (Coromandel Annual Report, 2015, pg 123)	This sentence includes an element of both quantitative and qualitative information, but doesn't compare to any additional years; for this reason, it is classified as a Type 4 disclosure.
Type 5	[Chart format] "Total waste; Landfill; FY14 8,600; FY15 7,060" (Monsanto CSR Report, 2015, pg 76)	This chart entry contains data for the financial year 2014 and 2015; because a Type 5 disclosure doesn't require a narrative component, this classifies as a Type 5.

A. 3.3 User Reliability

To ensure the reliability of coding throughout the entirety of the research intra-coder reliability will be used. Furthermore, inter-coder reliability will also be tested for the incorporation of data coded by Wilson between 2002 and 2011. Based on the results from the coder reliability, the data will be merged and treated as a single dataset including results from 2002 to 2016. Reliability testing will be done by

using a test-retest method where the author will recode ten percent of the data set for the intra-coder reliability test and seven percent of the dataset for the inter-coder reliability test. The difference in retest percent is due to the size of data set samples. Recommended retest sample size varies greatly depending on the number of coders, the number of variables and the reliability test being used, however, 5 to 10 percent is typically accepted as a guideline (De Swert, 2012).

Following the retest, the reliability will be calculated using Krippendorff's alpha. Previously, CONI methods have performed well on coder reliability test despite the complexity of the procedures; Beck et al. reported a Krippendorff's alpha score of 0.97 and Wilson scored 0.88 (Beck *et al*., 2010 & Wilson, 2013). Typically, a score above 0.80 using Krippendorff's alpha is considered high and acceptable (De Swert, 2012).

A.4 Analysis

The analysis will be performed separately on measurements of diversity, quality, and quantity data to preserve the multifaceted advantage of using the CONI method. Following the analysis, the results will be logically analyzed in relation to each aspect to provide a comprehensive analysis of the corporations.

A.4.1 Diversity

To score a corporation on diversity each report was given a score out of 18; 18 being the total number of categories that were available to be reported on. For categories that a corporation did report on there was a value of one given; if a corporation failed to report within a category a value of zero was given. Dividing the total sum of diversity in the report by 18 provides a number up to one that is referred to as the diversity index (Wilson, 2013). To report on an overall category of corporations or year the diversity index scores for the appropriate dataset can simply be averaged.

These index scores will be used to illustrate the trend over the timeframe for P-MNC, I-MNC and domestic corporations. A one-tailed paired t-test will also be run to test for significance over time, as

well as a regression analysis. Also, to determine if the diversity of I-MNC disclosures is more similar to P-MNC or domestic, a one-tailed two-sample t-test will be run to determine if there are significant differences between the categories in terms of diversity.

A.4.2 Quality

In order to effectively express the quality profile of a report, the quality types from 1-5 were scored as a percentage based on the total CED quantity. This calculation is based on the following formula adapted from Wilson (2013).

$$Type\ x\ quality\ percentage = \frac{Quantity\ of\ type\ x\ CED\ sentences}{Total\ CED\ Quantity} * 100$$

These percentages will be used to show the trend over the timeframe for P-MNC, I-MNC and domestic corporations. A one-tailed paired t-test will also be run to test for significance over time, as well as a regression analysis. Also, to determine if the quality of I-MNC disclosures is more similar to P-MNC or domestic, a one-tailed two-sample t-test will be run to determine if there are significant differences between the categories in terms of quality.

A.4.3 Quantity

To determine the quantity of CED disclosure in a report the total CED sentence count was summed. The total quantity will be used to illustrate the trend over the timeframe for P-MNC, I-MNC and domestic corporations. A one-tailed paired t-test will also be run to test for significance over time, as well as a regression analysis. Also, to determine if the quantity of I-MNC disclosures is more similar to P-MNC or domestic, a one-tailed two-sample t-test will be run on specific categories to determine if there is

significant difference between the categories in terms of diversity and whether the I-MNC use a disclosure strategy that is more similar to P-MNC or domestic corporations.

Appendix B: Extended Results & Discussion

B.1 Analysis of CED Diversity

B.1.1 Diversity of disclosures from Domestic Corporations

In 2002 the average diversity index score for the four domestic corporations was 10 out of a possible 18. By 2016 the average score was 13.5 [Table B.1]. The diversity scores per company increased relatively consistently, however, both Coromandel and Rallis Indian Ltd have high periods of diversity between 2002-2004 and 2007-2009, respectively [Figure B.1]. For the first half of the reporting period,

Zuari has a generally lower diversity score but finishes 2016 on par with other corporations in the category.

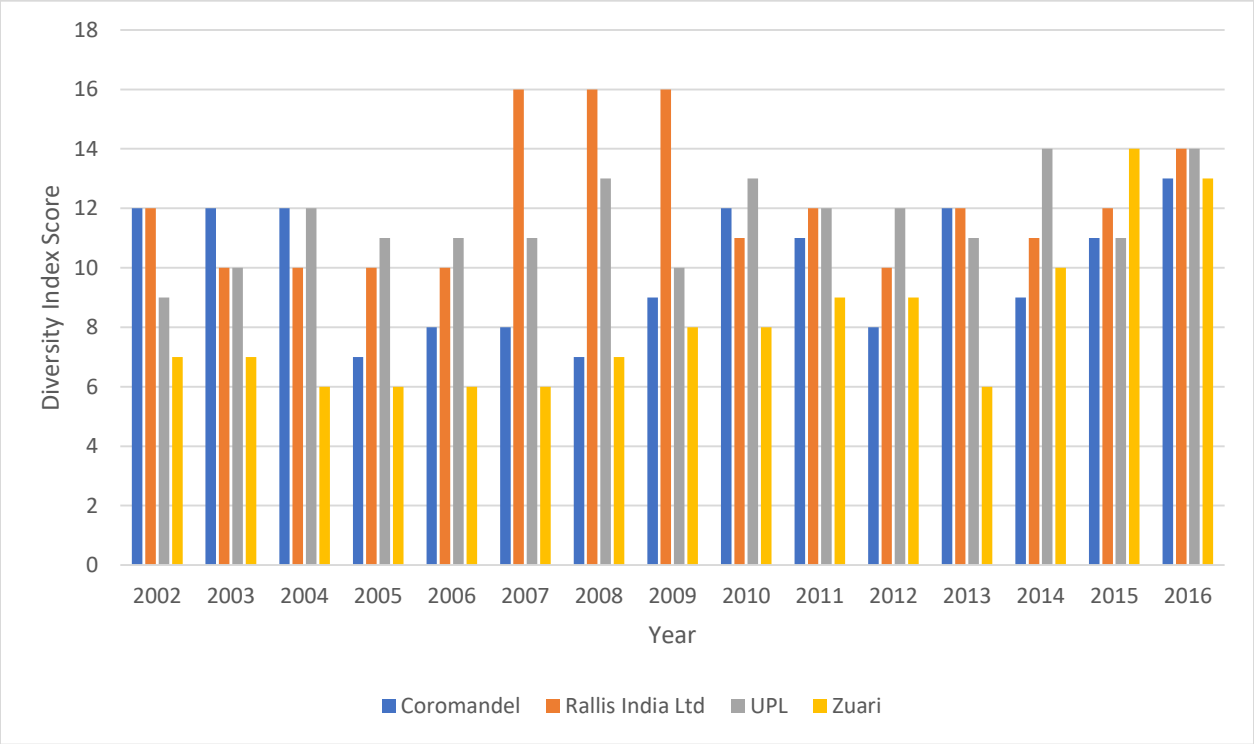

Figure B. 1: Diversity index score for the corporate environmental disclosures from domestic Indian corporations between the years 2002 and 2016.

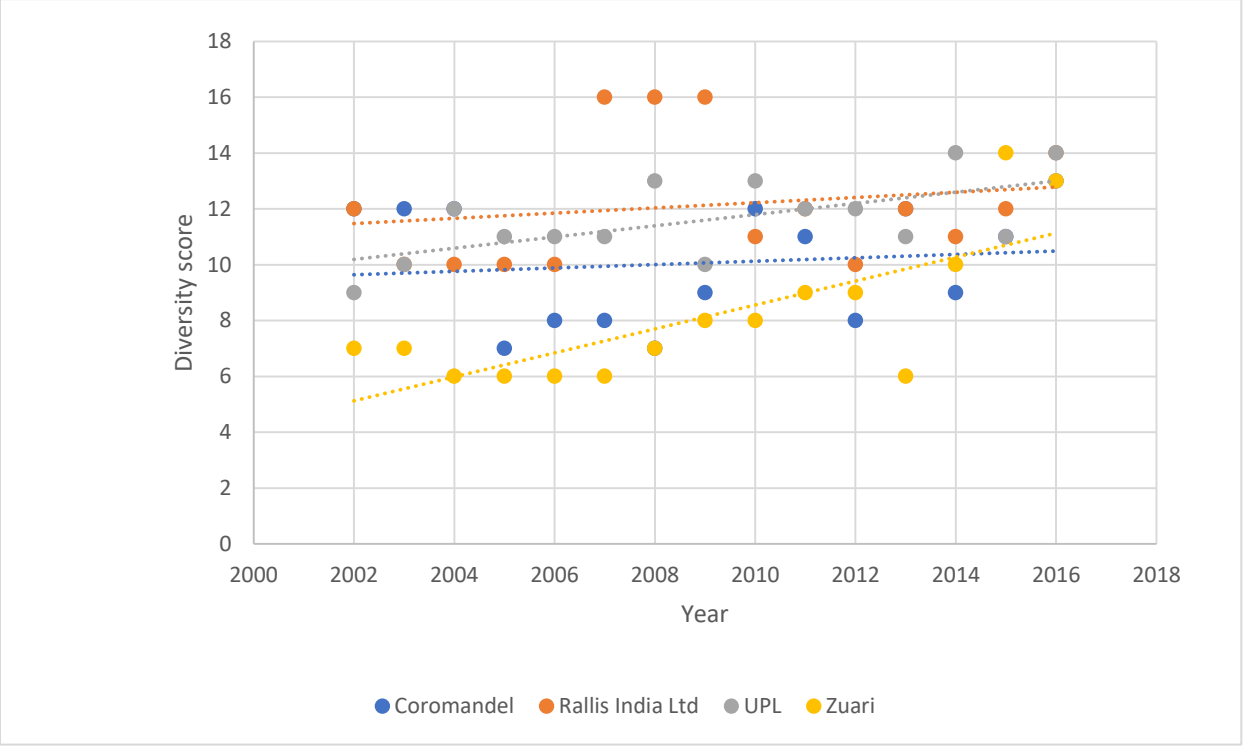

Figure B. 2: Total diversity score of disclosure for domestic Indian corporations from 2002-2016. Coromandel (p=0.649221), Rallis (p=0.518678), UPL (p=0.01466), Zuari (p=0.001083)

Table B. 1: Regression statistics for the diversity of CEDs from Coromandel from 2002-2016

Regression Statistics	
Multiple R	0.128065
R Square	0.016401
Adjusted R Square	-0.05926
Standard Error	2.182116
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1.032143	1.032143	0.216763	0.649221
Residual	13	61.90119	4.76163		
Total	14	62.93333			

Table B. 2: Regression statistics for the diversity of CEDs from Rallis from 2002-2016

Regression Statistics	
Multiple R	0.180952
R Square	0.032743
Adjusted R Square	-0.04166
Standard Error	2.342238
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2.414286	2.414286	0.440075	0.518678
Residual	13	71.31905	5.486081		
Total	14	73.73333			

Table B. 3: Regression statistics for the diversity of CEDs from UPL from 2002-2016

Regression Statistics	
Multiple R	0.615125
R Square	0.378378
Adjusted R Square	0.330561
Standard Error	1.189699
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	11.2	11.2	7.913043	0.01466
Residual	13	18.4	1.415385		
Total	14	29.6			

Table B. 4: Regression statistics for the diversity of CEDs from Zuari from 2002-2016

Regression Statistics	
Multiple R	0.757051
R Square	0.573127
Adjusted R Square	0.54029
Standard Error	1.716543
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	51.42857	51.42857	17.454	0.001083
Residual	13	38.30476	2.94652		
Total	14	89.73333			

5.1.2 Diversity of disclosures from Indian Subsidiaries

The average diversity of CEDs published by Indian subsidiaries in 2002 was 9.25 out of 18 [Table B.4]. This indicates that out of a possible 18 reporting categories Indian subsidiaries addressed only 9.25 in 2002. By 2016 the average diversity score for Indian subsidiaries had risen to 14.25 [Table B.4]. It should be noted that there were five instances of no publication, Syngenta 2006, 2007, 2012, Bayer 2008 and Monsanto 2014; these instances are not used to calculate the average disclosure for the year. Apart from this their diversity scores are reasonably consistent [Figure B.3].

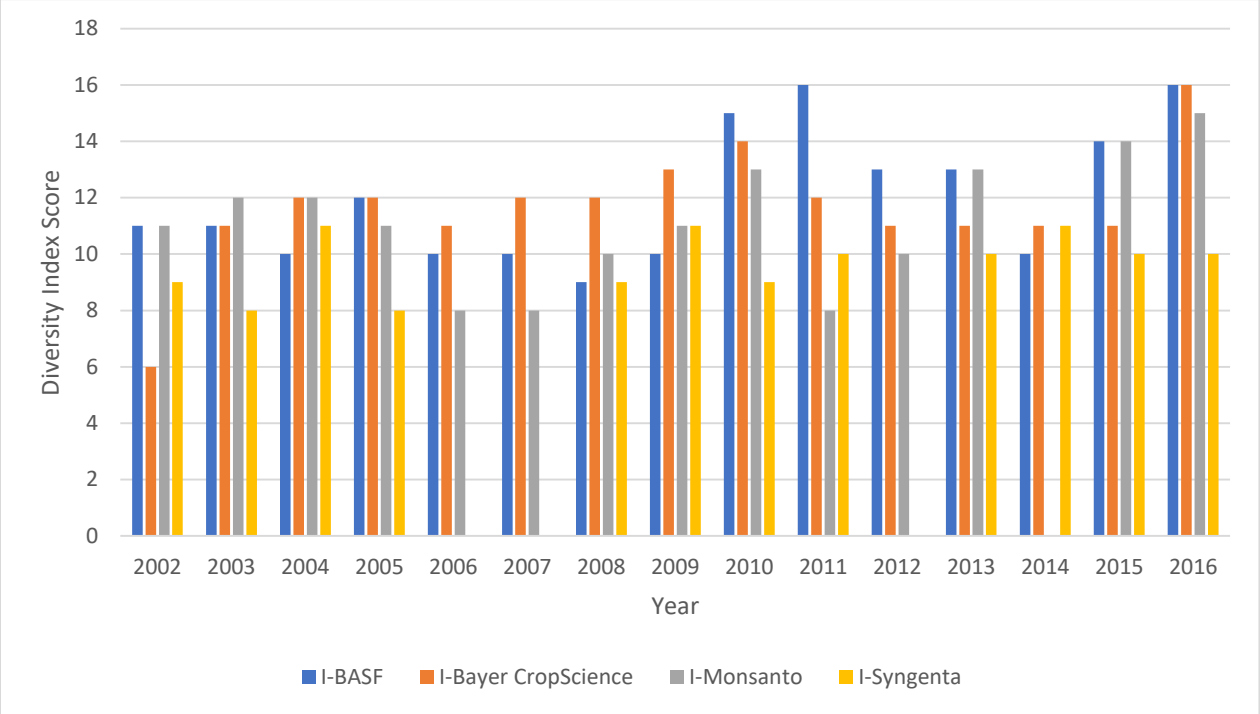

Figure B. 3: Diversity index score for the corporate environmental disclosures from Indian subsidiaries between the years 2002 and 2016.

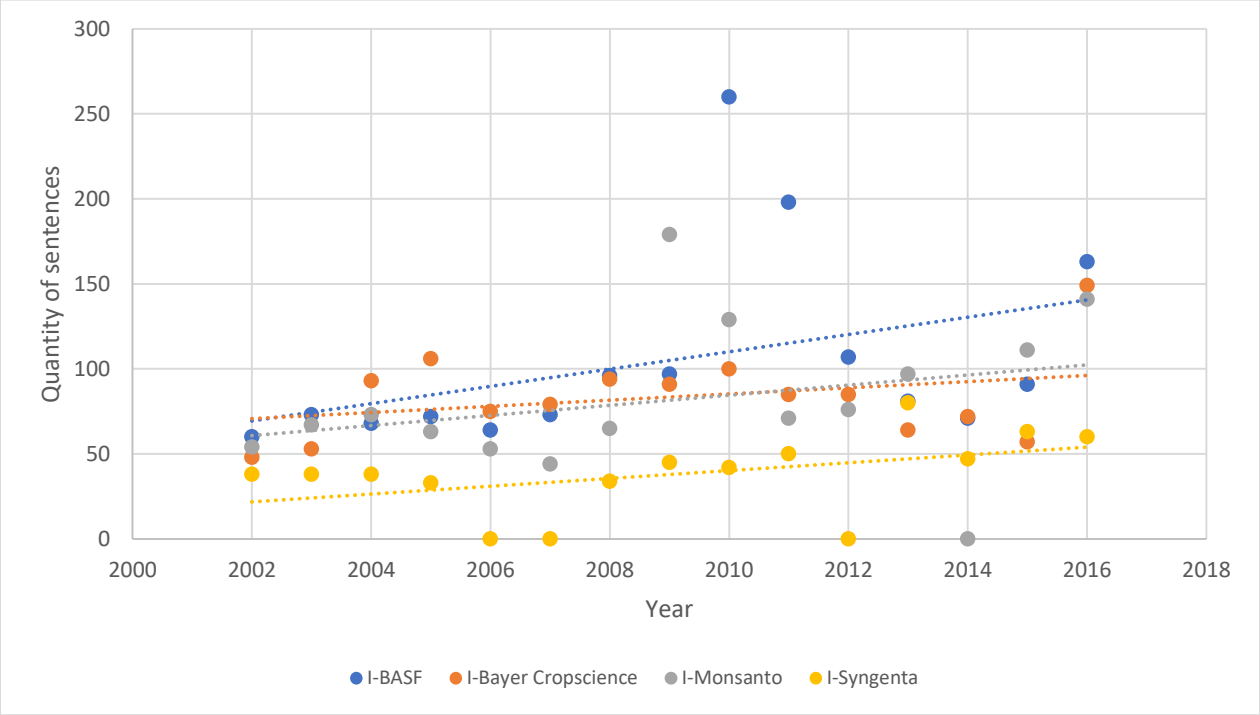

Figure B. 4: Total diversity score of disclosure for I-MNCs from 2002-2016. I-BASF (p=0.027049), I-Bayer (p=0.078875), I-Monsanto (p=0.16152), I-Syngenta (p=0.110613).

Table B. 5: Regression statistics for the diversity of CEDs from I-BASF from 2002-2016

Regression Statistics	
Multiple R	0.568399
R Square	0.323077
Adjusted R Square	0.271006
Standard Error	2.015326
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	25.2	25.2	6.204545	0.027049
Residual	13	52.8	4.061538		
Total	14	78			

Table B. 6: Regression statistics for the diversity of CEDs from I-Bayer from 2002-2016

Regression Statistics	
Multiple R	0.480743
R Square	0.231114
Adjusted R Square	0.171969
Standard Error	1.904617
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	14.175	14.175	3.907581	0.069676
Residual	13	47.15833	3.627564		
Total	14	61.33333			

Table B. 7: Regression statistics for the diversity of CEDs from I-Monsanto from 2002-2016

Regression Statistics	
Multiple R	0.395568
R Square	0.156474
Adjusted R Square	0.086181
Standard Error	2.116298
Observations	14

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	9.969656	9.969656	2.226006	0.16152
Residual	12	53.74463	4.478719		
Total	13	63.71429			

Table B. 8: Regression statistics for the diversity of CEDs from I-Syngenta from 2002-2016

Regression Statistics	
Multiple R	0.48428
R Square	0.234527
Adjusted R Square	0.15798
Standard Error	0.984682
Observations	12

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2.970677	2.970677	3.06382	0.110613
Residual	10	9.69599	0.969599		
Total	11	12.66667			

B.1.3 Diversity of disclosures from parent multinational corporations

In 2002 the average diversity score for CEDs from the four selected parent multinational corporations was 11 [Table B.7]. This means that on average these corporations reported in 11 out of a possible 18 categories. By 2016 this average rose to 16.75 [Table B.7], this highest of all the categories of

corporations. Notably, Bayer CropScience and Monsanto had the lowest diversity scores in 2002 at 6 and 7, respectively [Figure B.5]. BASF and Syngenta had scores of 17 and 14, respectively. However, both Bayer and Monsanto had made discernible improvements by 2005.

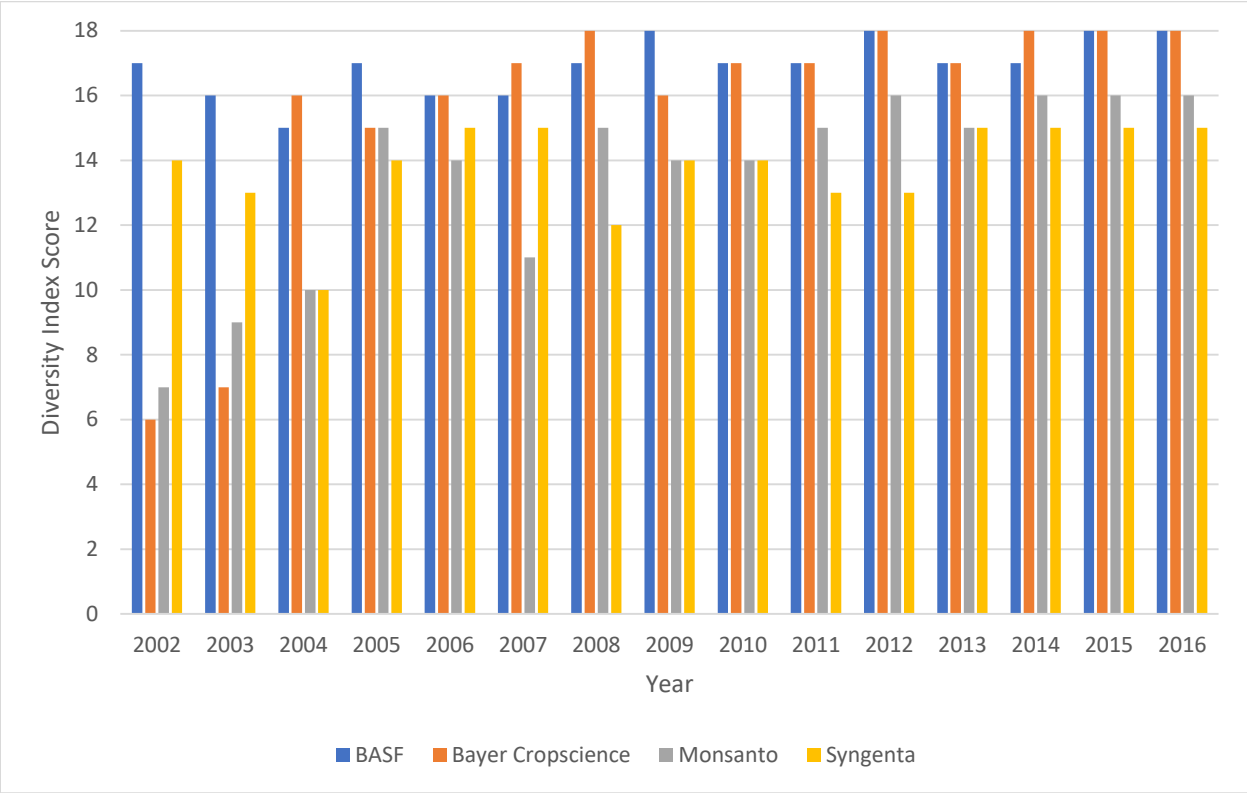

Figure B. 5: Diversity index score for the corporate environmental disclosures from Parent Multinational corporations between the years 2002 and 2016.

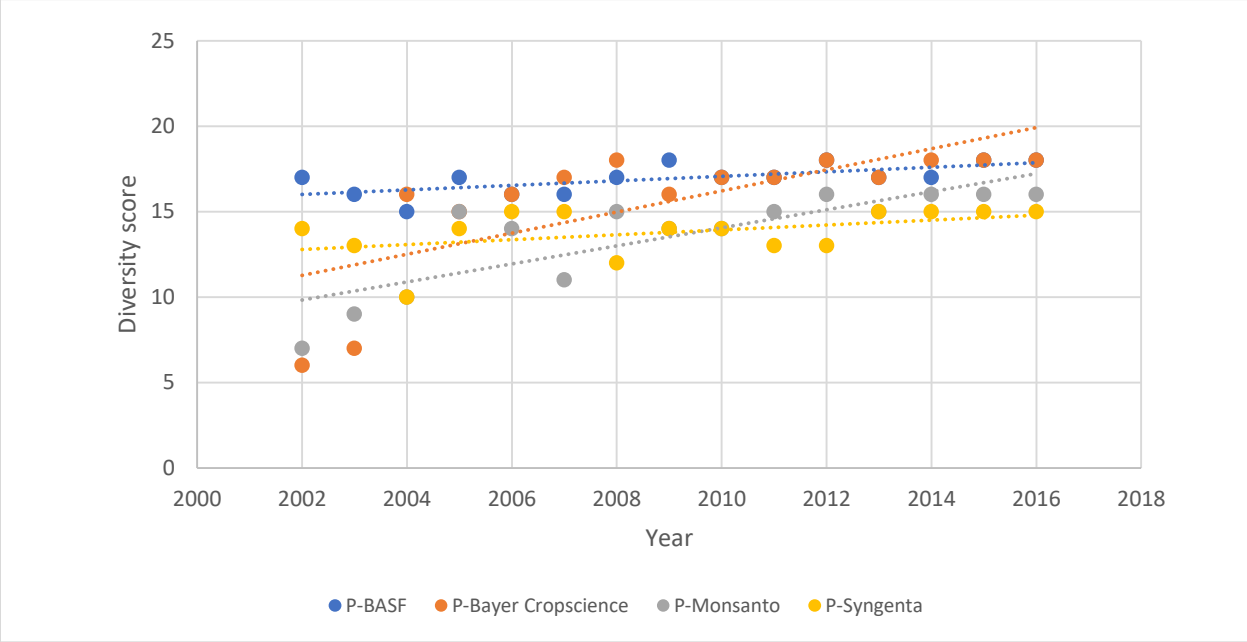

Figure B. 6: Total diversity score of disclosures from 2002-2016. P-BASF (p=0.006416), P-Bayer (p=0.002247), P-Monsanto (p=0.000169), P-Syngenta (p=0.093532).

Table B. 9: Regression statistics for the diversity of CEDs from P-BASF from 2002-2016

Regression Statistics	
Multiple R	0.668723
R Square	0.447191
Adjusted R Square	0.404667
Standard Error	0.681855
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	4.889286	4.889286	10.51625	0.006416
Residual	13	6.044048	0.464927		
Total	14	10.93333			

Table B. 10: Regression statistics for the diversity of CEDs from P-Bayer from 2002-2016

Regression Statistics	
Multiple R	0.724566
R Square	0.524996
Adjusted R Square	0.488458
Standard Error	2.727505
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	106.8893	106.8893	14.36822	0.002247
Residual	13	96.71071	7.439286		
Total	14	203.6			

Table B. 11: Regression statistics for the diversity of CEDs from P-Monsanto from 2002-2016

Regression Statistics	
Multiple R	0.822155
R Square	0.675938
Adjusted R Square	0.65101
Standard Error	1.698523
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	78.22857	78.22857	27.11579	0.000169
Residual	13	37.50476	2.884982		
Total	14	115.7333			

Table B. 12: Regression statistics for the diversity of CEDs from P-Syngenta from 2002-2016

Regression Statistics	
Multiple R	0.448561
R Square	0.201207
Adjusted R Square	0.139762
Standard Error	1.321005
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	5.714286	5.714286	3.274559	0.093532
Residual	13	22.68571	1.745055		
Total	14	28.4			

B.1.4 Average Diversity for CEDs from all corporations

By consolidating the results within the categories of corporations it is possible to plot the overall diversity score per categories of corporations per year [Figure B.7]. From this plot, it is possible to see that the overall diversity scores in 2002-2004 were more similar than in later years. A possible reason for this is the missing publication from the Indian subsidiary corporations [Table B.4], as well as the low diversity scores for P-Bayer and P-Monsanto in 2002, 2003 and 2004 [Table B.7]. The most obvious difference in score can be seen in the year 2006-2008 and again in 2012 and 2014. These gaps do lessen slightly in 2010 and again in 2015 and 2016.

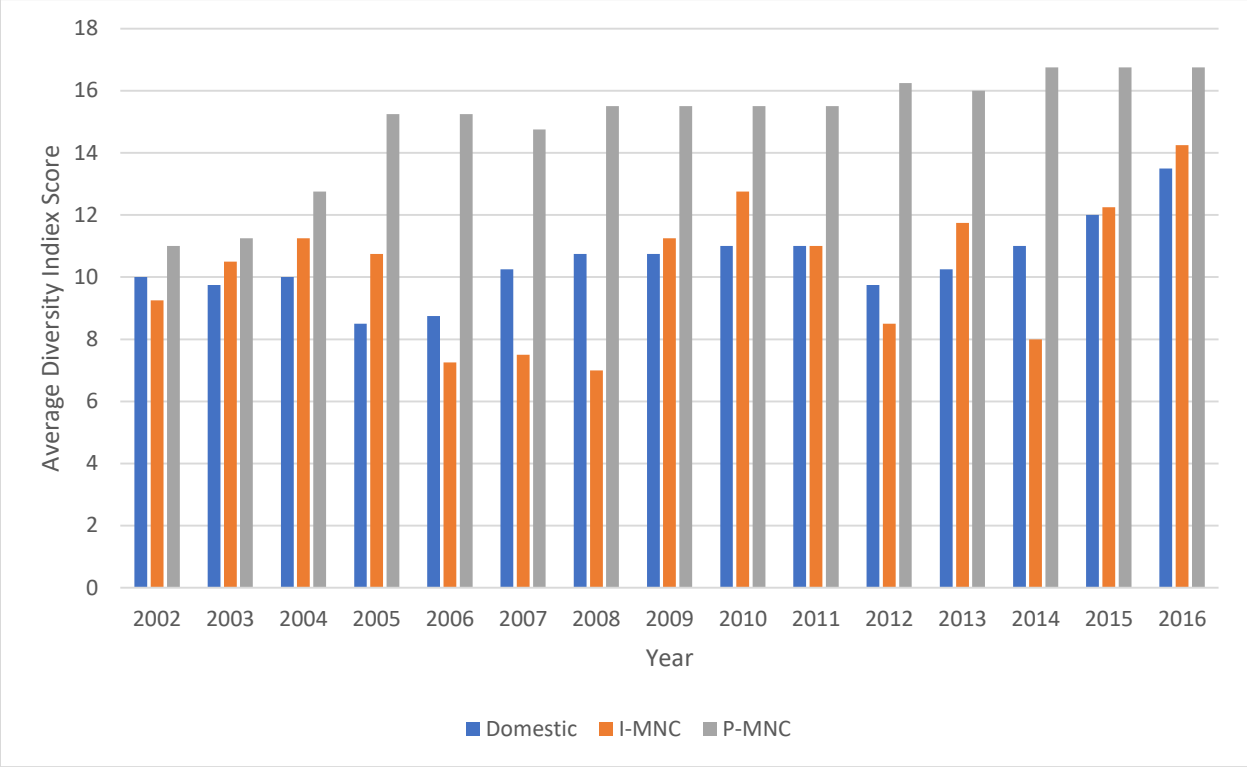

Figure B. 7: Average diversity index score for the corporate environmental disclosures from domestic corporations (Domestic), Indian subsidiary corporations (I-MNC) and parent multinational corporations (P-MNC) between the years 2002 and 2016.

Results of a simple linear regression show that 51 percent of the diversity variation can be attributed to publication year [Table B.2]. Additionally, the diversity of CED reports from domestic Indian corporations in 2016 was statistically significantly higher than in 2002, as determined by ANOVA ($F(1,13)= 13.6073$, $p=0.002728$) [Table B.3]. Overall, the diversity of CEDs published by domestic Indian corporations seems to be significantly affected by publication year [Table B.3].

Table B. 13: Regression statistics for the diversity of CEDs from Domestic Indian Corporations from 2002-2016

Regression Statistics	
Multiple R	**0.7151**
R Square	**0.5114**
Adjusted R Square	**0.4739**
Standard Error	**0.8869**
Observations	**15**

ANOVA	**Df**	**SS**	**MS**	**F**	**Significance F**
Regression	**1**	**10.7056**	**10.7056**	**13.6073**	**0.002728**
Residual	**13**	**10.2277**	**0.7867**		
Total	**14**	**20.9332**			

Results from a simple linear regression show that 46 percent of the variation in diversity of CEDs from Indian subsidiary corporations can be explained by publication year [Figure B.4, Table B.5]. Additionally, the diversity of CED reports from Indian Subsidiary Corporations in 2016 was statistically significantly higher than in 2002, as determined by ANOVA ($F(1,13)= 11.3452$, $p=0.0051$) [Table B.6]. Based on this it is possible to state that there is a statistically significant difference between the diversity of CEDs from Indian subsidiary corporations in the timeframe 2002-2016.

Table B. 14: Regression statistics for the diversity of CEDs from Indian Subsidiary Corporations from 2002-2016

Regression Statistics	
Multiple R	**0.6825**
R Square	**0.4658**
Adjusted R Square	**0.4247**
Standard Error	**1.0122**
Observations	**15**

ANOVA	**Df**	**SS**	**MS**	**F**	**Significance F**
Regression	**1**	**11.6117**	**11.6117**	**11.33452**	**0.0051**
Residual	**13**	**13.3179**	**1.02446**		
Total	**14**	**24.9296**			

Results from a simple linear regression show that 75 percent of the variation in CED diversity can be attributed to publication year [Figure B.6, Table B.8]. Additionally, the diversity of CED reports from parent multinational corporations in 2016 was statistically significantly higher than in 2002, as determined by ANOVA ($F(1,13)=39.8172$, $p=0.00002$) [Table B.9]. Overall, it can be shown that the publication year has a significant effect on the diversity of CED publication from parent multinational corporations.

Table B. 15: Regression statistics for the diversity of CEDs from Parent Multinational Corporations from 2002-2016

Regression Statistics	
Multiple R	**0.8685**
R Square	**0.7543**
Adjusted R Square	**0.7354**
Standard Error	**0.9529**
Observations	**15**

ANOVA	**Df**	**SS**	**MS**	**F**	**Significance F**
Regression	**1**	**36.2520**	**36.2520**	**39.8172**	**0.00002667**
Residual	**13**	**11.8063**	**0.9082**		
Total	**14**	**48.0583**			

B.1.5 Localization or standardization of diversity

To assess if the diversity of CEDs from I-MNC was more similar to the parent corporations or more localized to the domestic corporations, paired sample t-tests were performed. The T-tests were executed using the data from each corporation for the specified year but is displayed in a table with the category average for reference.

B.1.6 Discussion

Diversity was used to measure the number of set categories that publication addressed. Environmental disclosures can cover many different subjects and a well-rounded publication that reports on a variety of issues will rank well for diversity. Categories include everything from disclosure of pollution (POLL), environmental business risk (BRR), and environmental compliance (COMP) to external pressure groups (PRESS) and resource inputs (INP). In total there were 18 possible categories and 59 sub-categories. In this analysis, publications were scored out of the possible 18 categories for reporting.

At the beginning of the timeframe, in 2002, Domestic corporations were reporting on an average of 10 categories. Meanwhile, I-MNC were averaging 9.25 and P-MNC 11. By 2016, the average diversity of disclosures for domestic corporations was 13.5, which is an increase of 3.5 from 2002. I-MNC also increased, averaging 14.5 by 2016, which is an increase of 5 from 2002. P-MNC also increased by 5.75 categories to average 16.75 in 2016. The average diversity for all three categories shows a relatively consistent increase between 2002 and 2016, with P-MNC always having the highest diversity. For the most part, I-MNCs have a slightly higher, but similar level of diversity to domestic corporations. However, between the years 2006-2008, the diversity of disclosures from I-MNC declined slightly and during the same time, the diversity of domestic corporations increased, resulting in an inversion of this trend.

A simple linear regression analysis was performed on all three categories of corporations to determine the significance of the change in diversity score over time. Results from this show that publication year could account for 51% of diversity variation in domestic corporations, 46% in I-MNC and 75% in P-MNC. ANOVA analysis also revealed significant variation in diversity scores for all three groups of corporations. Furthermore, visual inspection of scatter and bar plots all indicate the diversity scores for corporations have an increasing trend. It should be noted that the maximum diversity based on this methodology is 18. Many of the corporations have approached or reached this maximum value; therefore, projections would be required to plateau.

Results from one-tailed two sample paired t-tests were used to assess the standardizations between the diversity scores for the corporations. Comparison between P-MNCs and I-MNCs showed statistically significant differences between the diversity scores for 12 of the years between 2002 and 2016, indicating a lack of standardization. Comparisons between P-MNCs and domestic corporations also showed statistical significance for the same 12 years, again indicating a lack of standardization. Finally, the comparison between I-MNCs and domestic corporations resulted in only one year of

significance, indicating that the diversity scores for these two categories of corporations were in fact similar.

B.2 CED Quantity

B.2.1 Quantity of disclosures from domestic Indian corporations

Coding results for the quantity of disclosure from domestic Indian corporations show a category total of 278 in 2002 and a publication average of 69.5 [Table B.13]. By 2016 the category total had increased to 934 with a publication average of 233.5 [Table B.13]. These measurements were taken from the number of sentences in a publication that had relevant environmental disclosure. This means that in 2002 companies were publishing on average 69.5 sentences containing environmental disclosure and by 2016 were publishing on average 233.5 sentences. Not all corporations published equally, however. UPL had a noticeably low quantity of disclosure in 2002 at 22 sentences but had the highest disclosure in the category by 2016 at 372 sentences [Figure 5.8]. Meanwhile, Coromandel, which had the highest disclosure in 2002 at 101 sentences, was publishing the lowest quality disclosure in 2016 at 192. Also notable is the quantity of disclosure by Rallis India in 2007, 2008 and 2009, here the disclosure quantity spiked to nearly four times what it had been previous years [Table 5.10, Figure 5.8].

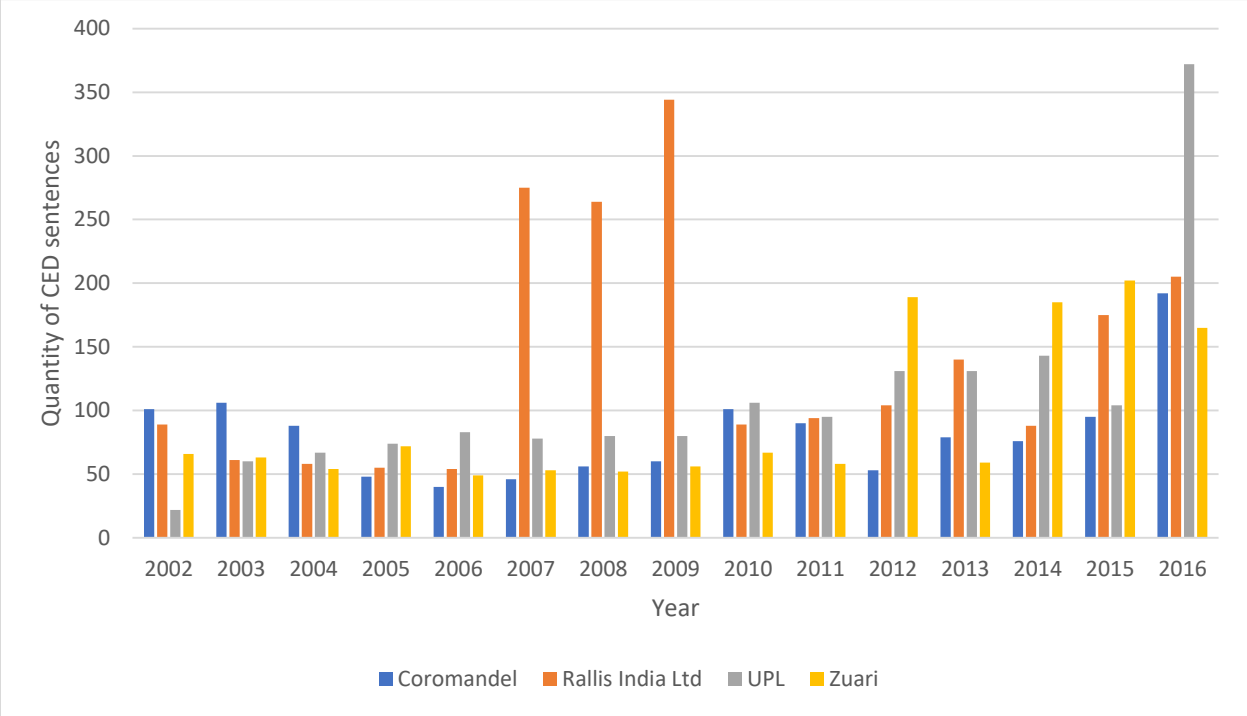

Figure B. 8: Quantity of CED sentences for the corporate environmental disclosures from domestic Indian corporations between the years 2002 and 2016.

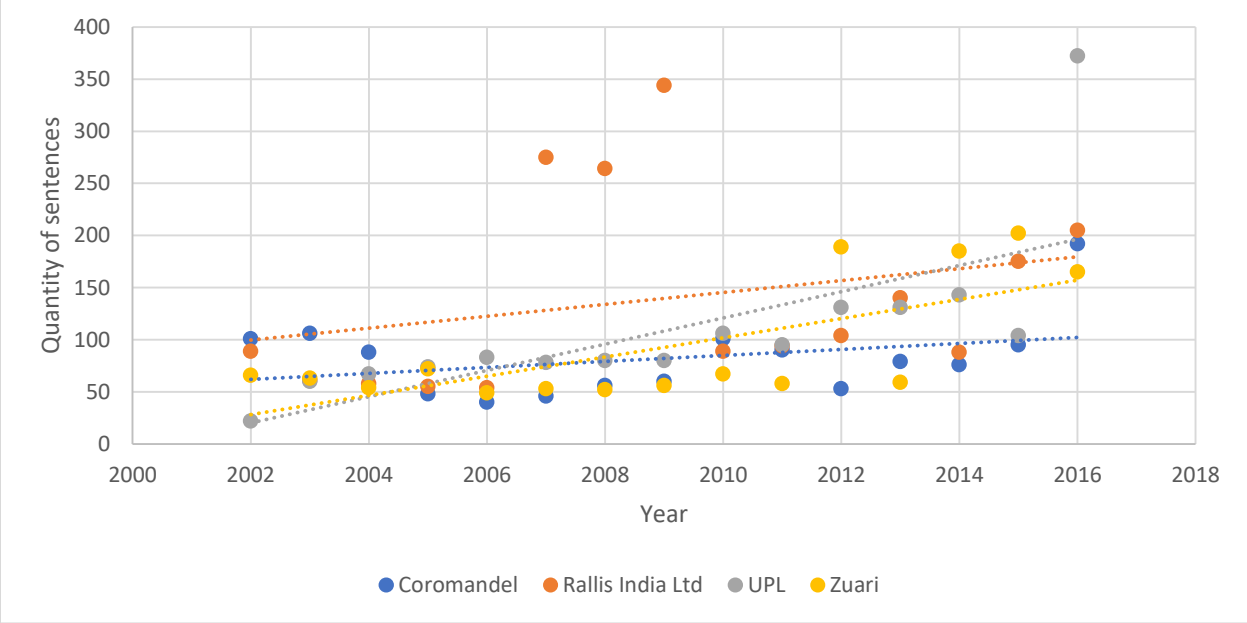

Figure B. 9: Total quantity of disclosures for domestic Indian corporations from 2002-2016. Coromandel (p= 0.212673), Rallis (p=0.318744), UPL (p= 0.002953), Zuari (p=0.003492).

Table B. 16: Regression statistics for the quantity of CEDs from Coromandel from 2002-2016

Regression Statistics	
Multiple R	0.341627
R Square	0.116709
Adjusted R Square	0.048764
Standard Error	36.79783
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2325.889	2325.889	1.717689	0.212673
Residual	13	17603.04	1354.08		
Total	14	19928.93			

Table B. 17: Regression statistics for the quantity of CEDs from Rallis from 2002-2016

Regression Statistics	
Multiple R	0.27635
R Square	0.076369
Adjusted R Square	0.005321
Standard Error	92.16953
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	9131.432	9131.432	1.07489	0.318744
Residual	13	110437.9	8495.223		
Total	14	119569.3			

Table B. 18: Regression statistics for the quantity of CEDs from UPL from 2002-2016

Regression Statistics	
Multiple R	0.711159
R Square	0.505748
Adjusted R Square	0.467728
Standard Error	57.77489
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	44402.41	44402.41	13.30235	0.002953
Residual	13	43393.19	3337.937		
Total	14	87795.6			

Table B. 19: Regression statistics for the quantity of CEDs from Zuari from 2002-2016

Regression Statistics	
Multiple R	0.702555
R Square	0.493583
Adjusted R Square	0.454628
Standard Error	43.23151
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	23680.8	23680.8	12.67055	0.003492
Residual	13	24296.53	1868.964		
Total	14	47977.33			

5.2.2 Quantity of disclosures from Indian subsidiaries

Coding results for the quantity of CED disclosure in publications by Indian subsidiary corporations show a total quantity of 200 in 2002, with a publication average of 50 [Table B.16]. Both the total quantity and average quantity increased by 2016 where the total quantity reported was 513 and the publication average was 128.25 [Table B.16]. Just as in the previous section, quantity is

measured by the number of sentences published by the corporation that include relevant environmental disclosures. Therefore, these results indicate that the average number of CED sentences per publication rose from 50 in 2002 to 128.25 in 2016. Most corporations show a relatively consistent increase in quantity over the timeframe. However, Monsanto's quantity noticeably spiked in 2009 and remained high in 2010 before dropping back down [Figure B.13].

It should also be noted that several corporations in this category did not publish reports in certain years, those being Syngenta in 2006, 2007 and 2012, as well as Monsanto in 2014. These were not included as data points when calculating the year average.

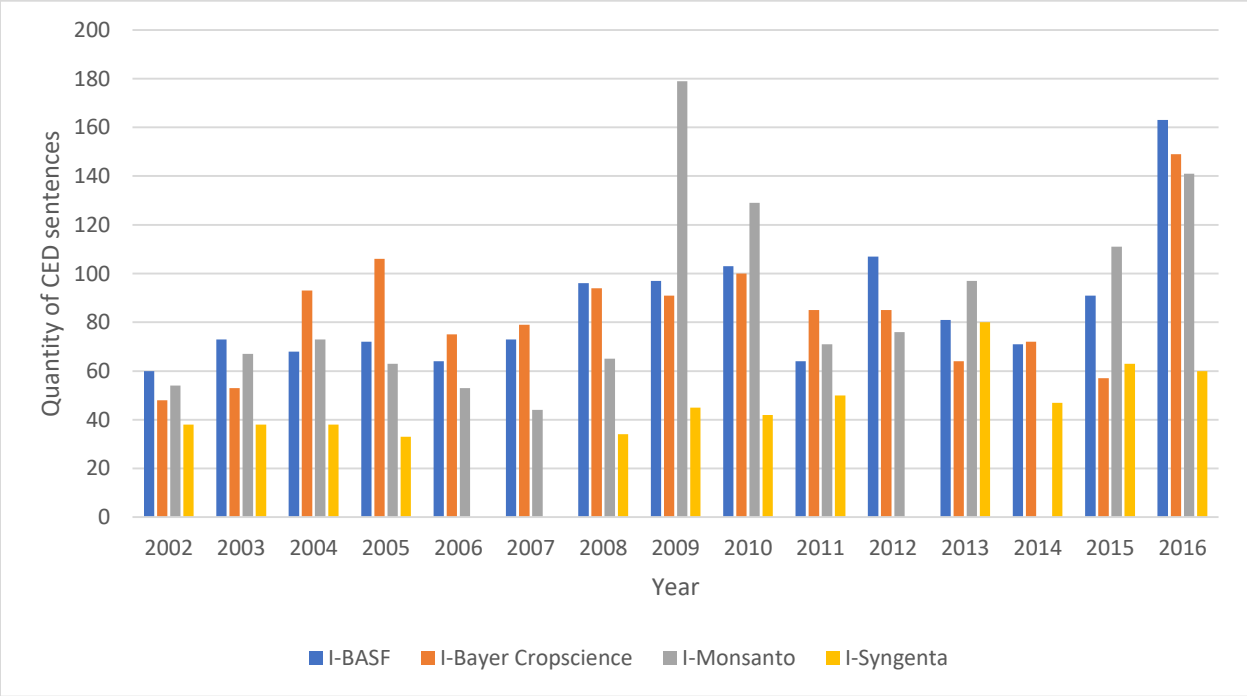

Figure B. 10: Quantity of CED sentences for the corporate environmental disclosures from Indian subsidiaries between the years 2002 and 2016.

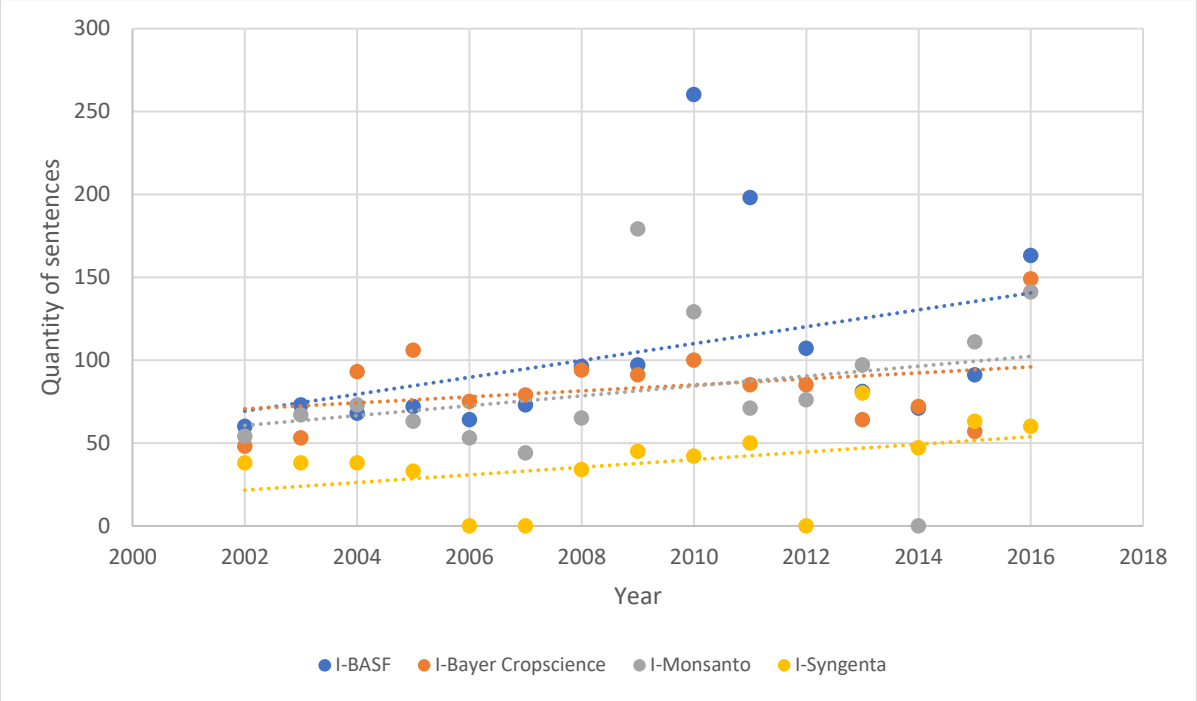

Figure B. 11: Total quantity of disclosure for I-MNCs from 2002-2016. I-BASF (p=0.144962), I-Bayer (p=0.242071), I-Monsanto (p=0.274214), I-Syngenta (p=0.097297).

Table B. 20: Regression statistics for the quantity of CEDs from I-BASF from 2002-2016

Regression Statistics	
Multiple R	0.607021
R Square	0.368475
Adjusted R Square	0.319896
Standard Error	21.65566
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	3557.157	3557.157	7.585084	0.016409
Residual	13	6096.576	468.9674		
Total	14	9653.733			

Table B. 21: Regression statistics for the quantity of CEDs from I-Bayer from 2002-2016

Regression Statistics	
Multiple R	0.395102
R Square	0.156106
Adjusted R Square	0.091191
Standard Error	54.83896
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	7231.889	7231.889	2.404769	0.144962
Residual	13	39095.04	3007.311		
Total	14	46326.93			

Table B. 22: Regression statistics for the quantity of CEDs from I-Monsanto from 2002-2016

Regression Statistics	
Multiple R	0.301853
R Square	0.091115
Adjusted R Square	0.021201
Standard Error	43.50194
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2466.289	2466.289	1.303247	0.274214
Residual	13	24601.44	1892.419		
Total	14	27067.73			

Table B. 23: Regression statistics for the quantity of CEDs from I-Syngenta from 2002-2016

Regression Statistics	
Multiple R	0.444036
R Square	0.197168
Adjusted R Square	0.135411
Standard Error	21.57265
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1485.804	1485.804	3.192673	0.097297
Residual	13	6049.93	465.3792		
Total	14	7535.733			

5.2.3 Quantity of disclosures from parent multinational corporations

The quantity of CED disclosure for publications by parent multinational corporations totalled 921 in 2002, with a publication average of 230.25 [Table B.19]. By 2016 the total quantity of CEDs for the category was 2308, with a publication average of 577 [Table B.19]. BASF was the most consistent reporting company for quantity over the entire timeframe, reporting 589 CED sentences in 2002 and 615 sentences in 2016. Bayer was quite noticeably the least consistent; it reported 43 CED sentences in 2002, quickly spiked to 1141 two years later in 2004 and ended 2016 with 599 CED sentences [Figure B.12]. This can be partially attributed to Bayer's occasional publication of a standalone report.

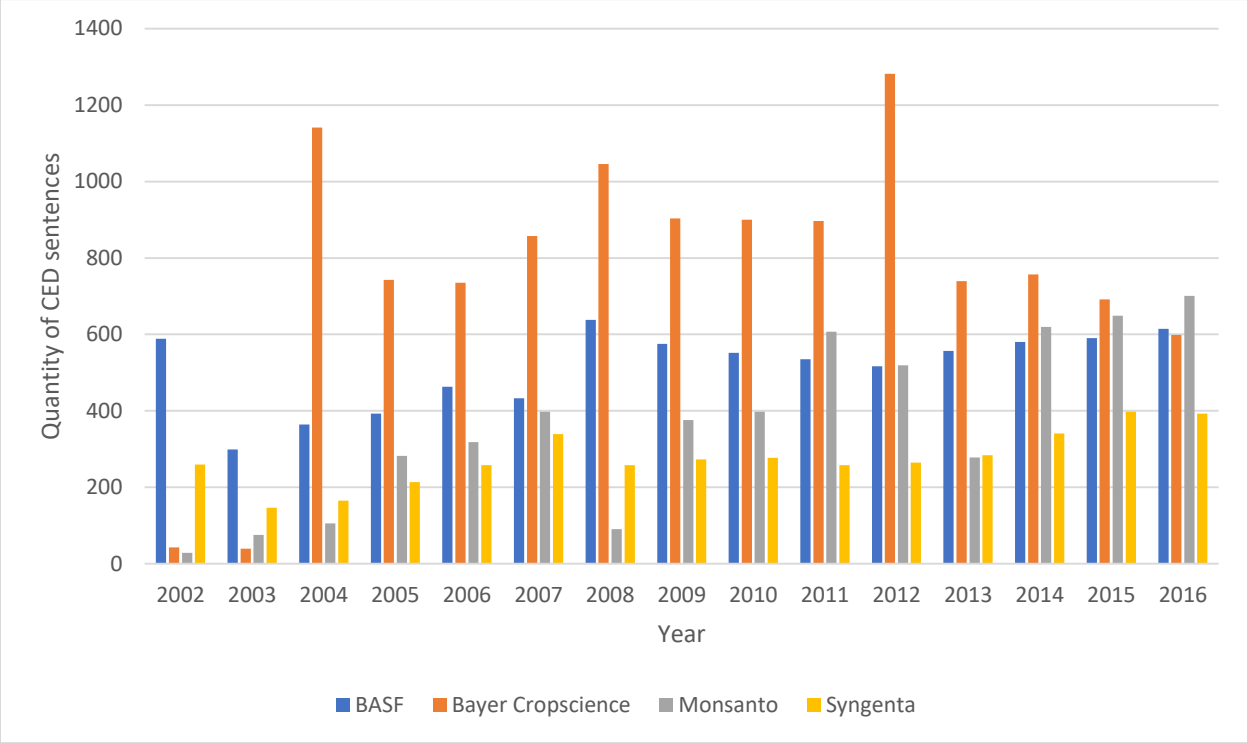

Figure B. 12: Quantity of CED sentences for the corporate environmental disclosures from parent multinational corporations between the years 2002 and 2016

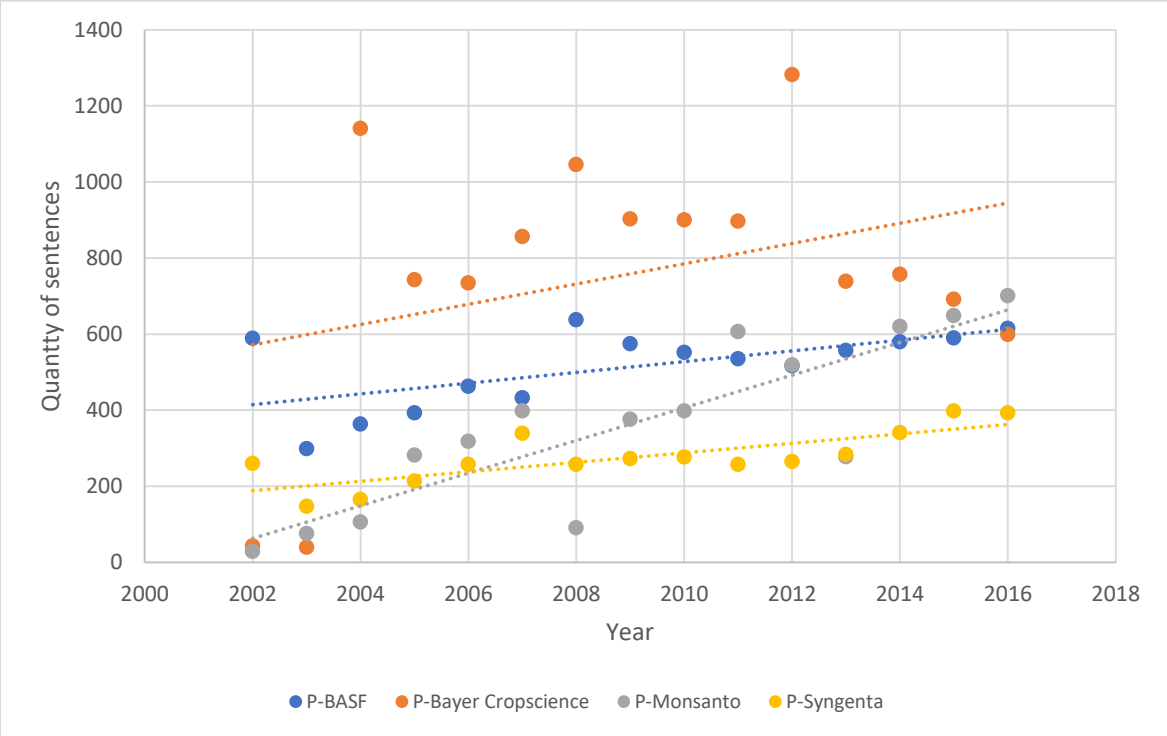

Figure B. 13: Total quantity of disclosure for P-MNCs from 2002-2016. P-BASF (p=0.012364), P-Bayer (p=0.203456), P-Monsanto (p=3.94919E-05), P-Syngenta (p=0.000613).

Table B. 24: Regression statistics for the quantity of CEDs from P-BASF from 2002-2016

Regression Statistics	
Multiple R	0.626984927
R Square	0.393110099
Adjusted R Square	0.346426261
Standard Error	81.22394313
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	55554.06	55554.06	8.420689	0.012364
Residual	13	85765.28	6597.329		
Total	14	141319.3			

Table B. 25: Regression statistics for the quantity of CEDs from P-Bayer from 2002-2016

Regression Statistics	
Multiple R	0.348182
R Square	0.121231
Adjusted R Square	0.053633
Standard Error	332.1457
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	197850.9	197850.9	1.793415	0.203456
Residual	13	1434170	110320.8		
Total	14	1632021			

Table B. 26: Regression statistics for the quantity of CEDs from P-Monsanto from 2002-2016

Regression Statistics	
Multiple R	0.859872
R Square	0.73938
Adjusted R Square	0.719332
Standard Error	118.3227
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	516344.9	516344.9	36.88107324	3.95E-05
Residual	13	182003.5	14000.27		
Total	14	698348.4			

Table B. 27: Regression statistics for the quantity of CEDs from P-Syngenta from 2002-2016

Regression Statistics	
Multiple R	0.779434
R Square	0.607517
Adjusted R Square	0.577326
Standard Error	46.29512
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	43127.23	43127.23	20.12246	0.000613
Residual	13	27862.1	2143.239		
Total	14	70989.33			

5.2.4 Total quantity of disclosures from all corporations

Finally, results were consolidated and plotted to visually display the total quantity of each category of the corporation for the timeframe [Figure B.14]. From this plot, it can be seen that all categories increased CED quantity between 2002 and 2016 at a relatively consistent pace. The quantity of CEDs published by P-MNC is notably higher than any of the other categories. Domestic corporations also maintain a higher or similar quantity of CED sentences than I-MNC. This suggests that in terms of

quantity I-MNC publish reports that are more similar to domestic reports as opposed to more similar to P-MNC.

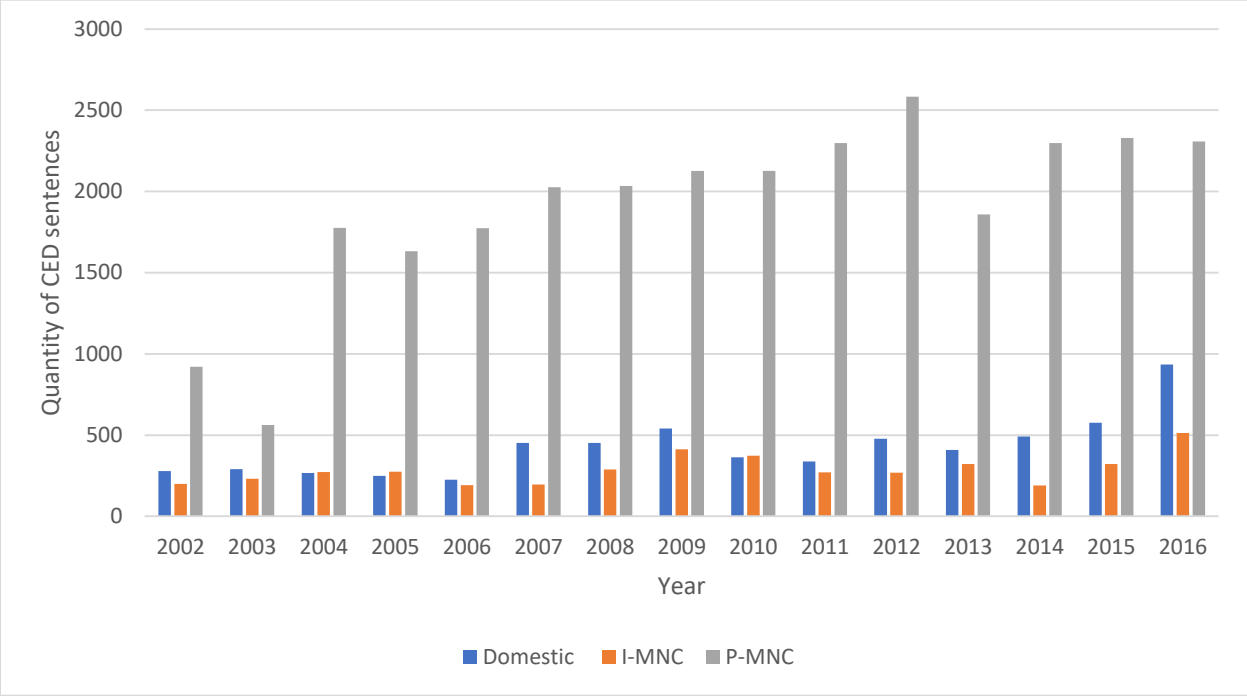

Figure B. 14: Total quantity of CED sentences for the corporate environmental disclosures from all companies in the category Domestic Indian corporations (Domestic), Indian subsidiary corporations (I-MNC) and parents multinational corporations (P-MNC) between the years 2002 and 2016.

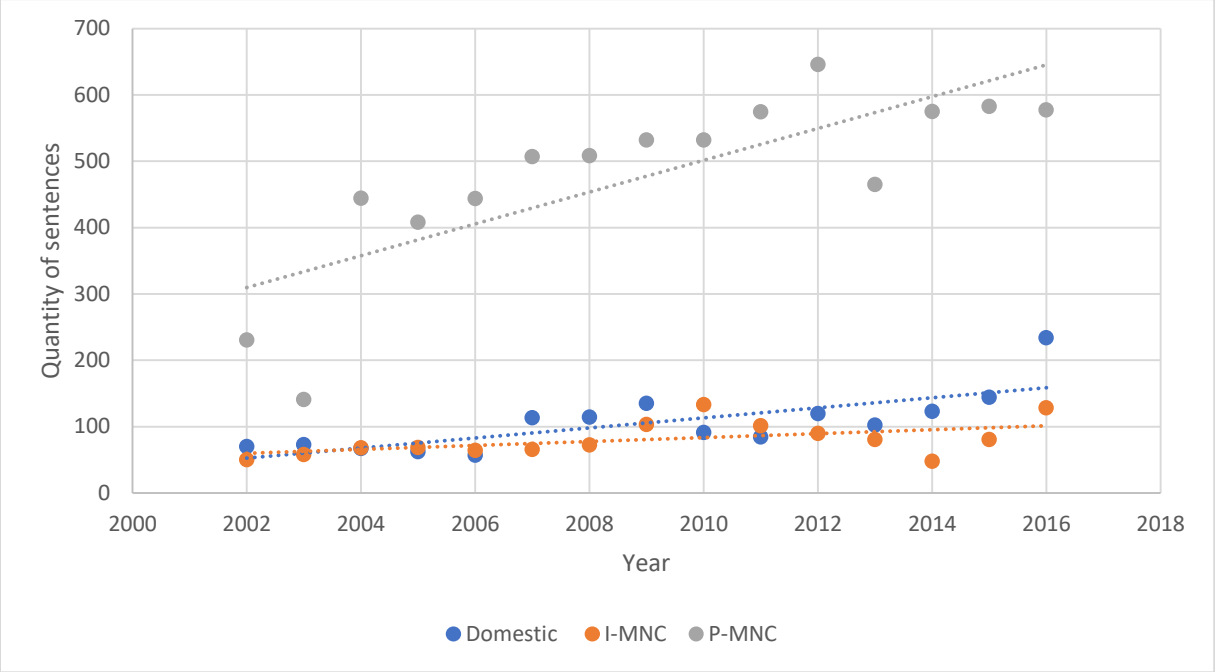

Figure B. 15: Mean quantity of disclosure for domestic Indian corporations, I-MNCs and P-MNC for 2002-2016. Domestic (p=0.001097), I-MNC (p=0.049118), P-MNC (p=0.00044).

Table B. 28: Regression statistics for the quantity of CEDs from domestic Indian corporations from 2002-2016

Regression Statistics	
Multiple R	**0.7571**
R Square	**0.5732**
Adjusted R Square	**0.5404**
Standard Error	**30.4172**
Observations	**15**

ANOVA	**Df**	**SS**	**MS**	**F**	**Significance F**
Regression	**1**	**16153.80**	**16153.80**	**17.4596**	**0.001082**
Residual	**13**	**12027.72**	**925.21**		
Total	**14**	**28181.52**			

Furthermore, a simple linear regression suggested that 41 percent of this variation in quantity could be attributed to publication year. This data suggests that a statistically significant relationship does exist between the quantity of CEDs published by Indian subsidiaries and the year of publication.

Table B. 29: Regression statistics for the quantity of CEDs from Indian subsidiary corporations from 2002-2016

Regression Statistics	
Multiple R	**0.6466**
R Square	**0.4181**
Adjusted R Square	**0.3733**
Standard Error	**15.8457**
Observations	**15**

ANOVA	**Df**	**SS**	**MS**	**F**	**Significance F**
Regression	**1**	**2344.95**	**2344.95**	**9.3392**	**0.0092**
Residual	**13**	**3264.11**	**251.08**		
Total	**14**	**5609.06**			

Furthermore, a simple linear regression suggested that 62 percent of this variation in quantity could be attributed to publication year. This data suggests that a statistically significant relationship does exist between the quantity of CEDs published by parent multinational corporations and the year of publication.

Table B. 30: Regression statistics for the quantity of CEDs from parent multinational corporations from 2002-2016

Regression Statistics	
Multiple R	**0.7914**
R Square	**0.6263**
Adjusted R Square	**0.5976**
Standard Error	**86.0522**
Observations	**15**

ANOVA	**Df**	**SS**	**MS**	**F**	**Significance F**
Regression	**1**	**161352.01**	**161352.01**	**21.79**	**0.00044**
Residual	**13**	**96264.72**	**7404.98**		
Total	**14**	**257616.73**			

B.3 CED Quality

B.3.1 Quality analysis for Coromandel

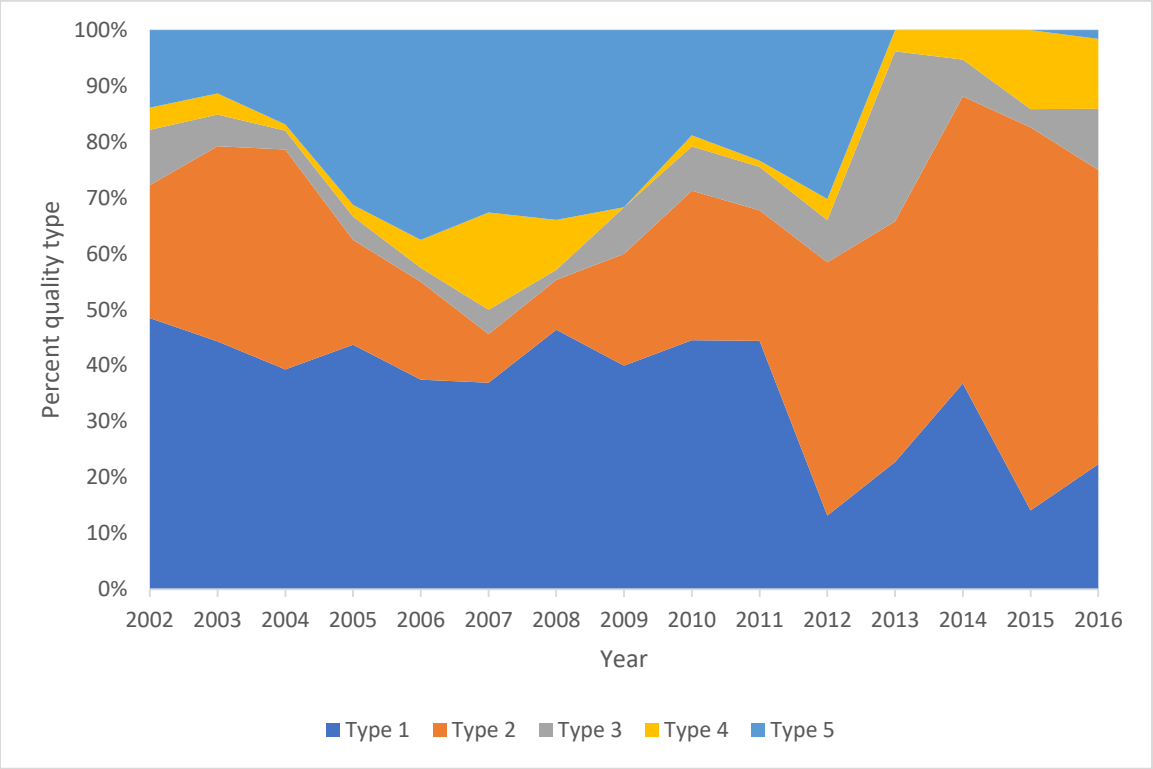

Figure B. 16: Quality composition of disclosures from Coromandel from 2002-2016. Type 1(p=0.003128), Type 2 (p=0.011438), Type 3 (p=0.229464), Type 4 (p=0.236308), Type 5 (p=0.067912).

Table B. 31:Regression statistics for the proportion of quality type 1 of CEDs from Coromandel from 2002-2016

Regression Statistics	
Multiple R	0.708234
R Square	0.501595
Adjusted R Square	0.463256
Standard Error	8.593829
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	966.2467	966.2467	13.08322	0.003128
Residual	13	960.1007	73.8539		
Total	14	1926.347			

Table B. 32: Regression statistics for the proportion of quality type 2 of CEDs from Coromandel from 2002-2016

Regression Statistics	
Multiple R	0.632259
R Square	0.399752
Adjusted R Square	0.353579
Standard Error	14.03165
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1704.59	1704.59	8.657703	0.011438
Residual	13	2559.532	196.8871		
Total	14	4264.122			

Table B. 33: : Regression statistics for the proportion of quality type 3 of CEDs from Coromandel from 2002-2016

Regression Statistics	
Multiple R	0.330134
R Square	0.108989
Adjusted R Square	0.040449
Standard Error	6.724291
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	71.90087	71.90087	1.590161	0.229464
Residual	13	587.8092	45.21609		
Total	14	659.7101			

Table B. 34: Regression statistics for the proportion of quality type 4 of CEDs from Coromandel from 2002-2016

Regression Statistics	
Multiple R	0.325602
R Square	0.106016
Adjusted R Square	0.037248
Standard Error	5.11562
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	40.3444	40.3444	1.541653	0.236308
Residual	13	340.2044	26.16957		
Total	14	380.5488			

Table B. 35: Regression statistics for the proportion of quality type 5 of CEDs from Coromandel from 2002-2016

Regression Statistics	
Multiple R	0.48342
R Square	0.233695
Adjusted R Square	0.174748
Standard Error	12.57255
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	626.6677	626.6677	3.964518	0.067912
Residual	13	2054.898	158.0691		
Total	14	2681.566			

B.3.2 Quality analysis for Rallis India

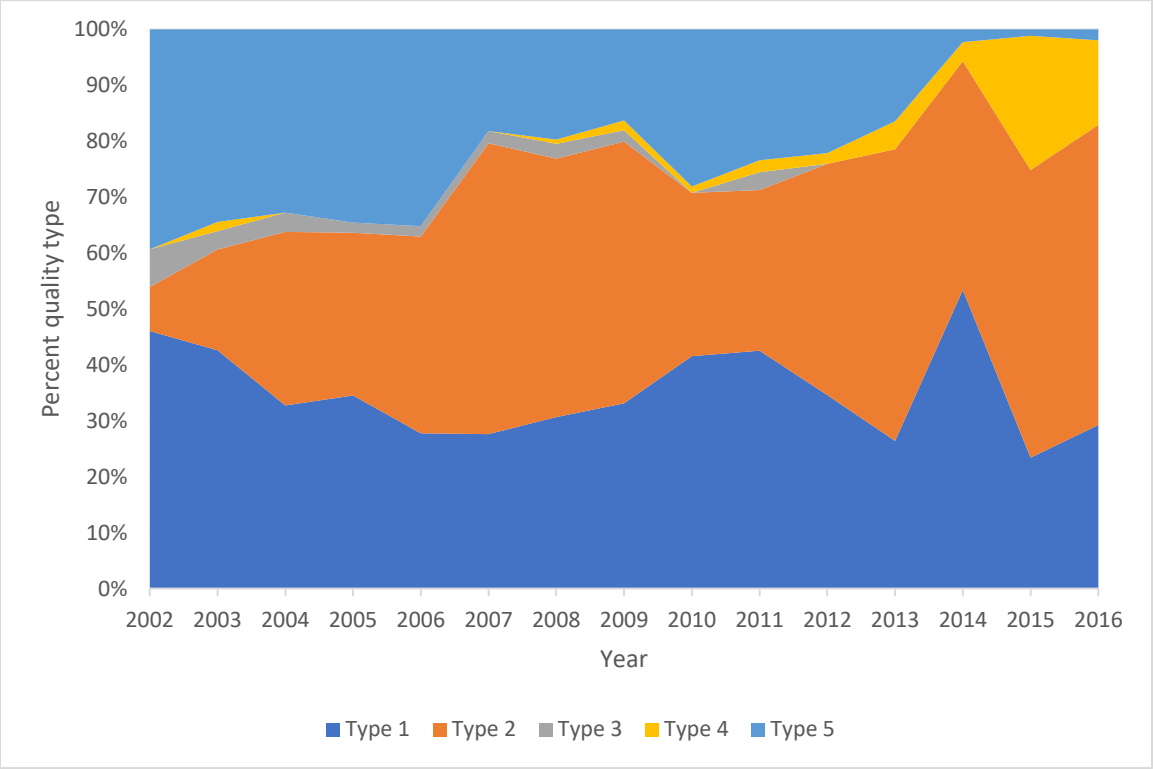

Figure B. 17: Quality composition of disclosures from Rallis India Ltd from 2002-2016. Type 1 (p=0.495358), Type 2 (p=0.00222), Type 3 (p=0.00024), Type 4 (p=0.005455), Type 5 (p=8.65E-06).

Table B. 36: Regression statistics for the proportion of quality type 1 of CEDs from Rallis India Ltd from 2002-2016

Regression Statistics	
Multiple R	0.19098
R Square	0.036473
Adjusted R Square	-0.03764
Standard Error	8.581925
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	36.24311	36.24311	0.492103	0.495358
Residual	13	957.4426	73.64943		
Total	14	993.6858			

Table B. 37: Regression statistics for the proportion of quality type 2 of CEDs from Rallis India Ltd from 2002-2016

Regression Statistics	
Multiple R	0.725146
R Square	0.525836
Adjusted R Square	0.489362
Standard Error	9.718139
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1361.544	1361.544	14.41669	0.00222
Residual	13	1227.749	94.44222		
Total	14	2589.293			

Table B. 38: Regression statistics for the proportion of quality type 3 of CEDs from Rallis India Ltd from 2002-2016

Regression Statistics	
Multiple R	0.811492
R Square	0.658519
Adjusted R Square	0.632252
Standard Error	1.164507
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	33.99616	33.99616	25.0695	0.00024
Residual	13	17.62899	1.356076		
Total	14	51.62515			

Table B. 39: Regression statistics for the proportion of quality type 4 of CEDs from Rallis India Ltd from 2002-2016

Regression Statistics	
Multiple R	0.678171
R Square	0.459916
Adjusted R Square	0.418371
Standard Error	5.163079
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	295.1057	295.1057	11.07031	0.005455
Residual	13	346.546	26.65739		
Total	14	641.6517			

Table B. 40: Regression statistics for the proportion of quality type 5 of CEDs from Rallis India Ltd from 2002-2016

Regression Statistics	
Multiple R	0.890365
R Square	0.792751
Adjusted R Square	0.776808
Standard Error	5.988195
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1783.111	1783.111	49.72635	8.65E-06
Residual	13	466.1602	35.85847		
Total	14	2249.271			

B.3.3 Quality analysis of UPL Limited

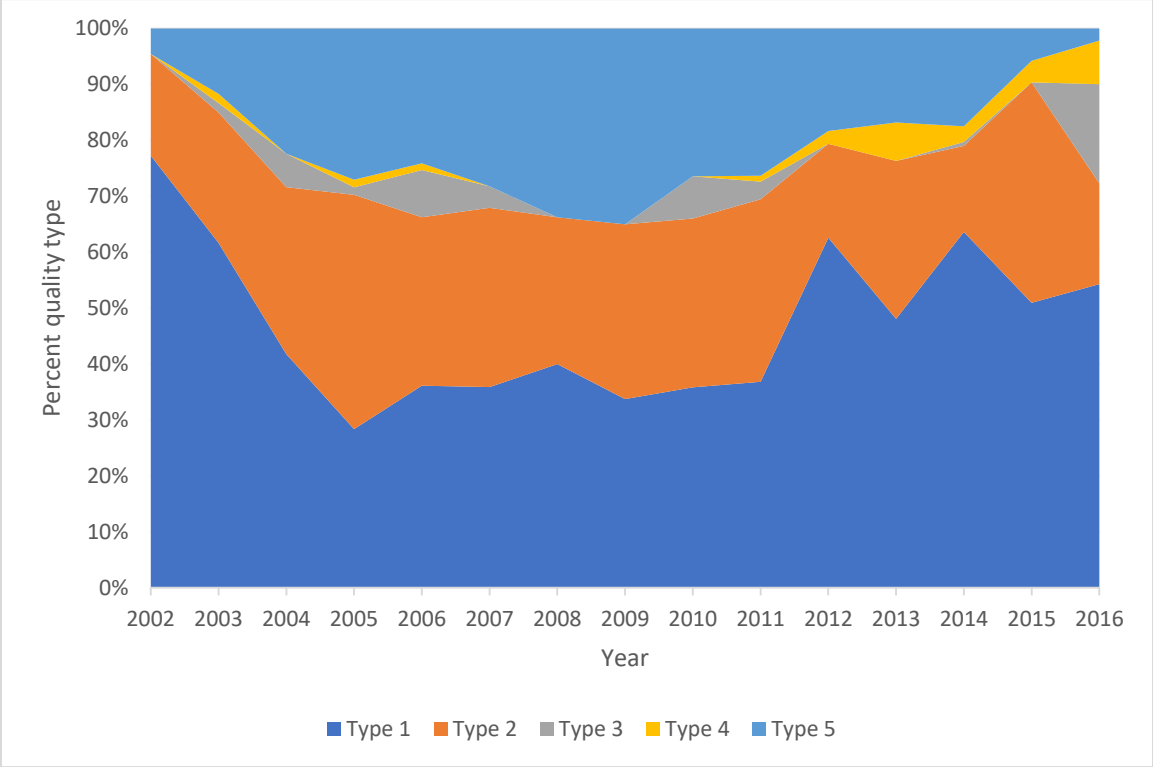

Figure B. 18: Quality composition of disclosure from UPL from 2002-2016. Type 1 (p=0.872292), Type 2 (p=0.635764), Type 3 (p=0.462509), Type 4 (p=0.003868), Type 5 (p= 0.416638).

Table B. 41: Regression statistics for the proportion of quality type 1 of CEDs from UPL from 2002-2016

Regression Statistics	
Multiple R	0.045425
R Square	0.002063
Adjusted R Square	-0.0747
Standard Error	14.63071
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	5.753805	5.753805	0.02688	0.872292
Residual	13	2782.75	214.0577		
Total	14	2788.504			

Table B. 42: : Regression statistics for the proportion of quality type 2 of CEDs from UPL from 2002-2016

Regression Statistics	
Multiple R	0.133307
R Square	0.017771
Adjusted R Square	-0.05779
Standard Error	8.189658
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	15.77505	15.77505	0.235201	0.635764
Residual	13	871.9165	67.0705		
Total	14	887.6916			

Table B. 43: Regression statistics for the proportion of quality type 3 of CEDs from UPL from 2002-2016

Regression Statistics	
Multiple R	0.205493
R Square	0.042227
Adjusted R Square	-0.03145
Standard Error	4.997018
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	14.31183	14.31183	0.573157	0.462509
Residual	13	324.6124	24.97019		
Total	14	338.9243			

Table B. 44: Regression statistics for the proportion of quality type 4 of CEDs from UPL from 2002-2016

Regression Statistics

Multiple R	0.697159
R Square	0.486031
Adjusted R Square	0.446495
Standard Error	1.859039
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	42.48617	42.48617	12.29337	0.003868
Residual	13	44.92832	3.456025		
Total	14	87.41449			

Table B. 45: Regression statistics for the proportion of quality type 5 of CEDs from UPL from 2002-2016

Regression Statistics	
Multiple R	0.226638
R Square	0.051365
Adjusted R Square	-0.02161
Standard Error	10.40323
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	76.18092	76.18092	0.703898	0.416638
Residual	13	1406.953	108.2272		
Total	14	1483.134			

B.3.4 Quality analysis of Zuari

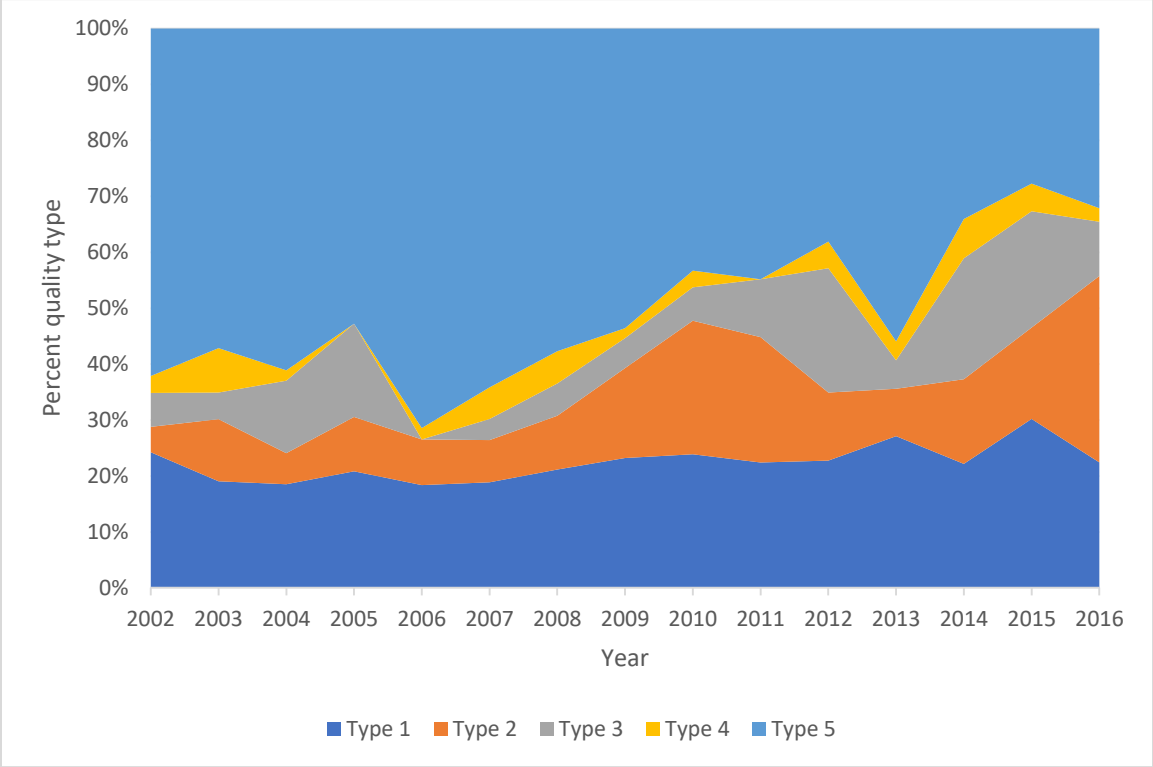

Figure B. 19: Quality composition of disclosure from Zuari from 2002-2016. Type 1 (p=0.02035), Type 2 (p= 0.005926), Type 3 (p=0.097645), Type 4 (p=0.787839), Type 5 (p=0.000238).

Table B. 46: Regression statistics for the proportion of quality type 1 of CEDs from Zuari from 2002-2016

Regression Statistics	
Multiple R	0.590944
R Square	0.349214
Adjusted R Square	0.299154
Standard Error	2.726637
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	51.86235	51.86235	6.975856	0.02035
Residual	13	96.64914	7.43455		
Total	14	148.5115			

Table B. 47: Regression statistics for the proportion of quality type 2 of CEDs from Zuari from 2002-2016

Regression Statistics

Multiple R	0.673388
R Square	0.453451
Adjusted R Square	0.411409
Standard Error	6.037609
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	393.1645	393.1645	10.7856	0.005926
Residual	13	473.8854	36.45272		
Total	14	867.0499			

Table B. 48: Regression statistics for the proportion of quality type 3 of CEDs from Zuari from 2002-2016

Regression Statistics	
Multiple R	0.443623
R Square	0.196801
Adjusted R Square	0.135017
Standard Error	6.650444
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	140.8801	140.8801	3.185287	0.097645
Residual	13	574.9692	44.2284		
Total	14	715.8493			

Table B. 49: Regression statistics for the proportion of quality type 4 of CEDs from Zuari from 2002-2016

Regression Statistics

Multiple R	0.075977
R Square	0.005772
Adjusted R Square	-0.07071
Standard Error	2.465665
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.458869	0.458869	0.075478	0.787839
Residual	13	79.03353	6.079502		
Total	14	79.4924			

Table B. 50 : Regression statistics for the proportion of quality type 5 of CEDs from Zuari from 2002-2016

Regression Statistics	
Multiple R	0.811749
R Square	0.658936
Adjusted R Square	0.6327
Standard Error	7.897025
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1566.309	1566.309	25.116	0.000238
Residual	13	810.719	62.363		
Total	14	2377.028			

B.3.5 Quality analysis of I-BASF

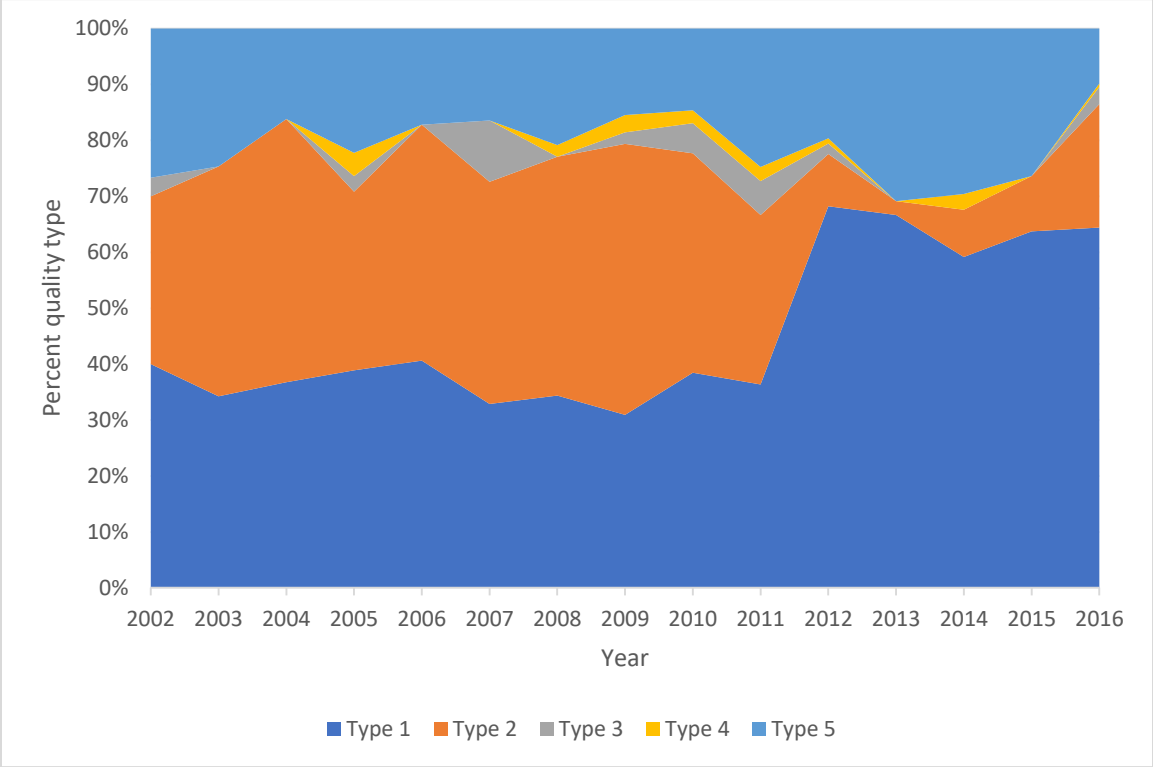

Figure B. 20: Quality composition of disclosure from I-BASF from 2002-2016. Type 1 (p=0.001141), Type 2 (p=0.004024), Type 3 (p=0.83187), Type 4 (p= 0.701068), Type 5 (p=0.913945).

Table B. 51: Regression statistics for the proportion of quality type 1 of CEDs from I-BASF from 2002-2016

Regression Statistics	
Multiple R	0.754881
R Square	0.569845
Adjusted R Square	0.536756
Standard Error	9.573284
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1578.325	1578.325	17.22164	0.001141
Residual	13	1191.421	91.64776		
Total	14	2769.746			

Table B. 52: Regression statistics for the proportion of quality type 2 of CEDs from I-BASF from 2002-2016

Regression Statistics

Multiple R	0.695048
R Square	0.483091
Adjusted R Square	0.443329
Standard Error	11.56311
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1624.456	1624.456	12.14951	0.004024
Residual	13	1738.172	133.7055		
Total	14	3362.628			

Table B. 53: Regression statistics for the proportion of quality type 3 of CEDs from I-BASF from 2002-2016

Regression Statistics	
Multiple R	0.05997
R Square	0.003596
Adjusted R Square	-0.07305
Standard Error	3.248991
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.495312	0.495312	0.046923	0.83187
Residual	13	137.2272	10.55594		
Total	14	137.7225			

Table B. 54: Regression statistics for the proportion of quality type 4 of CEDs from I-BASF from 2002-2016

Regression Statistics

Multiple R	0.108213
R Square	0.01171
Adjusted R Square	-0.06431
Standard Error	1.49085
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.342365	0.342365	0.154036	0.701068
Residual	13	28.89424	2.222634		
Total	14	29.23661			

Table B. 55: Regression statistics for the proportion of quality type 5 of CEDs from I-BASF from 2002-2016

Regression Statistics	
Multiple R	0.030546
R Square	0.000933
Adjusted R Square	-0.07592
Standard Error	6.308171
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.483119	0.483119	0.012141	0.913945
Residual	13	517.3092	39.79302		
Total	14	517.7923			

B.3.6 Quality analysis of I-Bayer

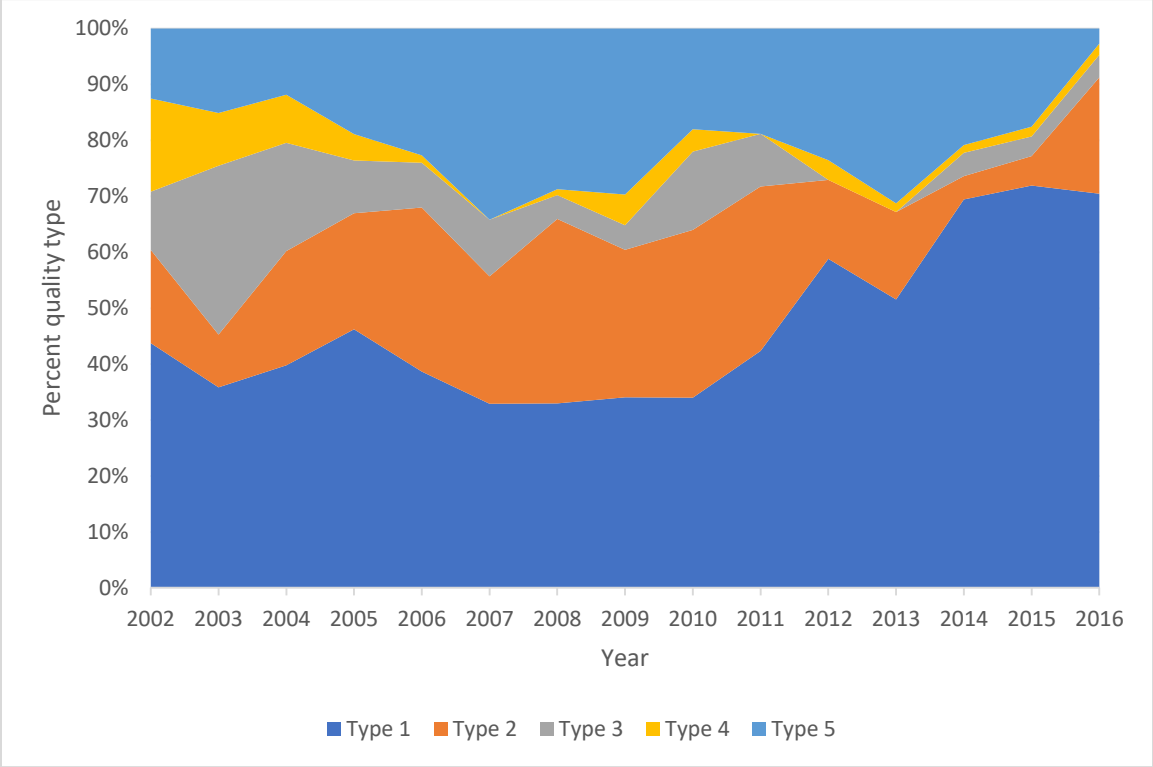

Figure B. 21: Quality composition of disclosure from I-Bayer from 2002-2016. Type 1 (p=0.001916), Type 2 (p=0.396966), Type (p=0.005518), Type 4 (p=0.006641), Type 5 (p=0.990807).

Table B. 56: Regression statistics for the proportion of quality type 1 of CEDs from I-Bayer from 2002-2016

Regression Statistics	
Multiple R	0.732064
R Square	0.535917
Adjusted R Square	0.500219
Standard Error	10.08023
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1525.409	1525.409	15.01225	0.001916
Residual	13	1320.942	101.6109		
Total	14	2846.351			

Table B. 57: Regression statistics for the proportion of quality type 2 of CEDs from I-Bayer from 2002-2016

Regression Statistics	
Multiple R	0.236072
R Square	0.05573
Adjusted R Square	-0.01691
Standard Error	9.091974
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	63.42401	63.42401	0.767251	0.396966
Residual	13	1074.632	82.66399		
Total	14	1138.056			

Table B. 58: Regression statistics for the proportion of quality type 3 of CEDs from I-Bayer from 2002-2016

Regression Statistics	
Multiple R	0.677508
R Square	0.459017
Adjusted R Square	0.417403
Standard Error	6.013043
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	398.8196	398.8196	11.03032	0.005518
Residual	13	470.0369	36.15668		
Total	14	868.8565			

Table B. 59: Regression statistics for the proportion of quality type 4 of CEDs from I-Bayer from 2002-2016

Regression Statistics	
Multiple R	0.666667
R Square	0.444446
Adjusted R Square	0.401711
Standard Error	3.480343
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	125.9735	125.9735	10.40005	0.006641
Residual	13	157.4662	12.11279		
Total	14	283.4398			

Table B. 60: Regression statistics for the proportion of quality type 5 of CEDs from I-Bayer from 2002-2016

Regression Statistics	
Multiple R	0.003258
R Square	1.06E-05
Adjusted R Square	-0.07691
Standard Error	8.657966
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.010342	0.010342	0.000138	0.990807
Residual	13	974.4849	74.96038		
Total	14	974.4952			

B.3.7 Quality analysis of I-Monsanto

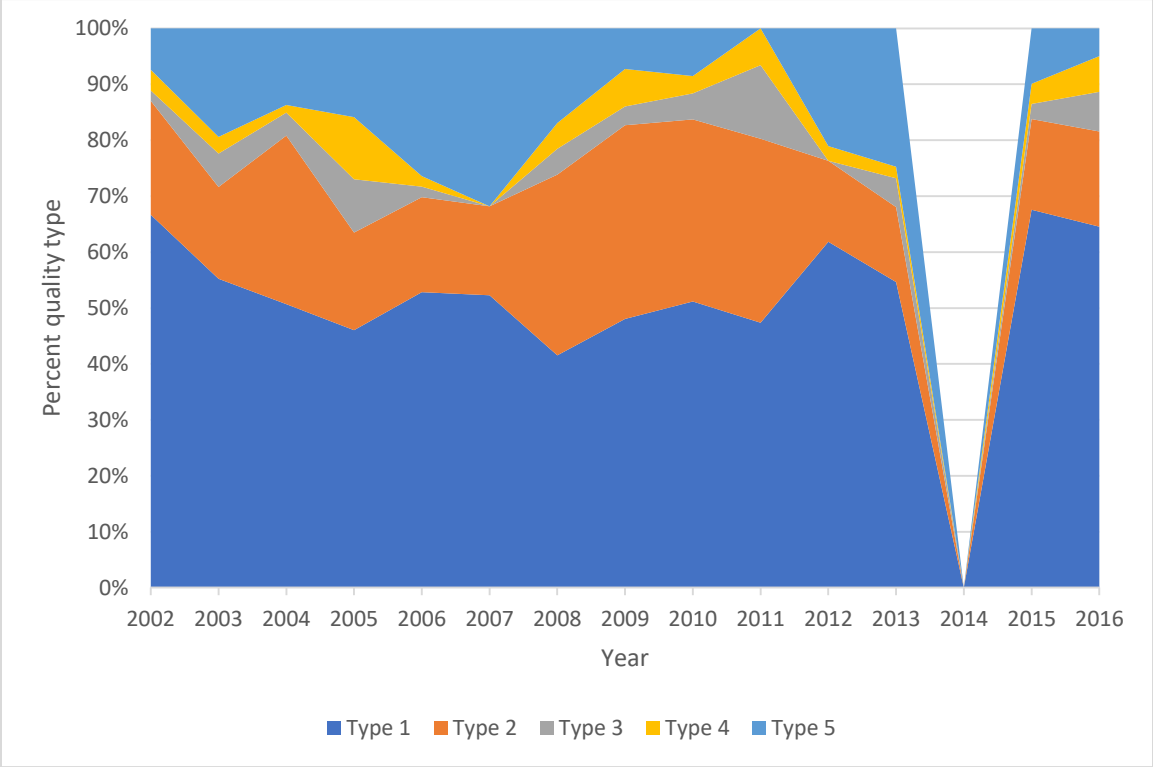

Figure B. 22: Quality composition of disclosure from I-Monsanto from 2002-2016. Type 1 (p=0.637622), Type 2 (p=0.329595), Type 3 (p=0.996855), Type 4 (p=0.897474), Type 5 (p=0.236979).

Table B. 61: Regression statistics for the proportion of quality type 1 of CEDs from I-Monsanto from 2002-2016

Regression Statistics	
Multiple R	0.132581
R Square	0.017578
Adjusted R Square	-0.05799
Standard Error	16.47734
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	63.15122	63.15122	0.232599	0.637622
Residual	13	3529.537	271.5028		
Total	14	3592.688			

Table B. 62: Regression statistics for the proportion of quality type 2 of CEDs from I-Monsanto from 2002-2016

Regression Statistics	
Multiple R	0.270455
R Square	0.073146
Adjusted R Square	0.00185
Standard Error	9.727633
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	97.08179	97.08179	1.025943	0.329595
Residual	13	1230.149	94.62684		
Total	14	1327.231			

Table B. 63: Regression statistics for the proportion of quality type 3 of CEDs from I-Monsanto from 2002-2016

Regression Statistics	
Multiple R	0.001114
R Square	1.24E-06
Adjusted R Square	-0.07692
Standard Error	3.80334
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.000233	0.000233	1.61E-05	0.996855
Residual	13	188.0502	14.4654		
Total	14	188.0504			

Table B. 64: Regression statistics for the proportion of quality type 4 of CEDs from I-Monsanto from 2002-2016

Regression Statistics	
Multiple R	0.036418
R Square	0.001326
Adjusted R Square	-0.07549
Standard Error	3.048483
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.160446	0.160446	0.017265	0.897474
Residual	13	120.8123	9.293251		
Total	14	120.9727			

Table B. 65: Regression statistics for the proportion of quality type 5 of CEDs from I-Monsanto from 2002-2016

Regression Statistics	
Multiple R	0.325161

R Square	0.10573
Adjusted R Square	0.03694
Standard Error	9.409193
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	136.0744	136.0744	1.536993	0.236979
Residual	13	1150.928	88.53291		
Total	14	1287.002			

B.3.8 Quality analysis of I-Syngenta

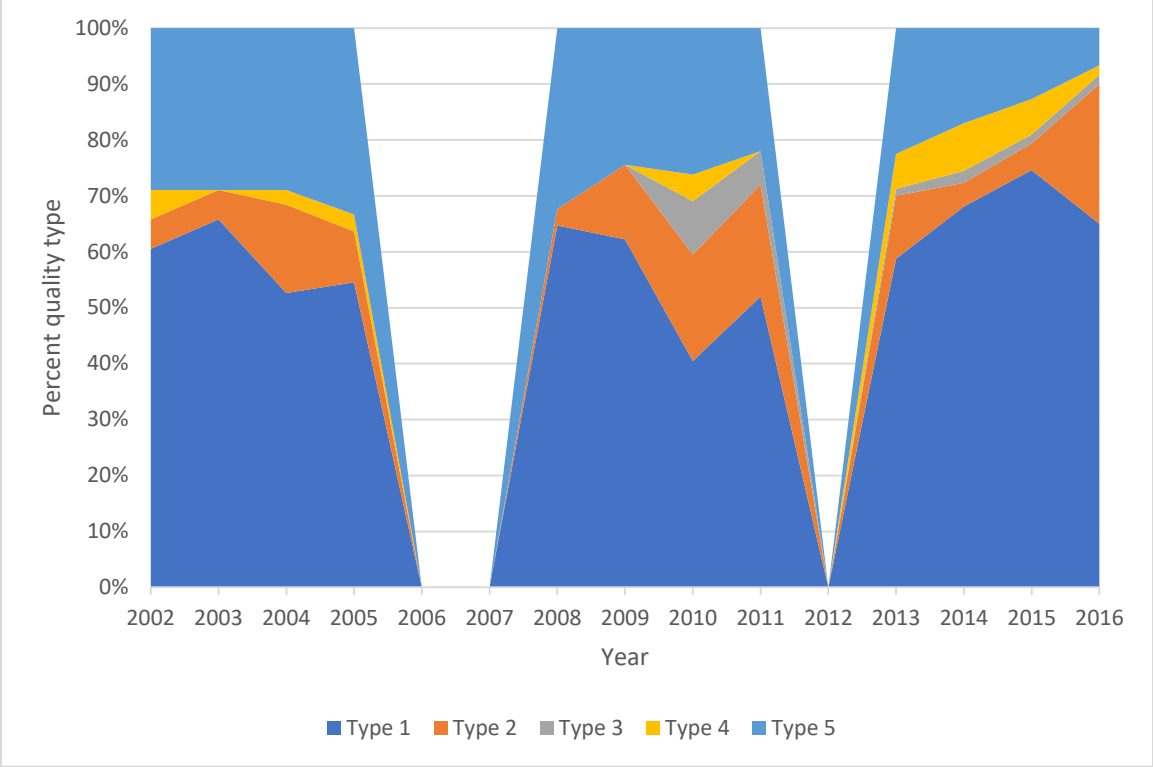

Figure B. 23: Quality composition of disclosure from I-Syngenta from 2002-2016. Type 1 (p=0.573692), Type 2 (p=0.305055), Type 3 (p=0.215392), Type 4 (p=0.239045), Type 5 (p=0.11977).

Table B. 66: Regression statistics for the proportion of quality type 1 of CEDs from I-Syngenta from 2002-2016

Regression Statistics	
Multiple R	0.158063
R Square	0.024984

Adjusted R Square	-0.05002
Standard Error	26.72003
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	237.8283	237.8283	0.333112	0.573692
Residual	13	9281.479	713.96		
Total	14	9519.308			

Table B. 67: Regression statistics for the proportion of quality type 2 of CEDs from I-Syngenta from 2002-2016

Regression Statistics	
Multiple R	0.283954
R Square	0.08063
Adjusted R Square	0.009909
Standard Error	7.960019
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	72.24005	72.24005	1.140118	0.305055
Residual	13	823.7047	63.3619		
Total	14	895.9448			

Table B. 68: Regression statistics for the proportion of quality type 3 of CEDs from I-Syngenta from 2002-2016

Regression Statistics	
Multiple R	0.339728
R Square	0.115415
Adjusted R Square	0.04737

Standard Error	2.677609
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	12.1608	12.1608	1.696164	0.215392
Residual	13	93.20466	7.169589		
Total	14	105.3655			

Table B. 69: Regression statistics for the proportion of quality type 4 of CEDs from I-Syngenta from 2002-2016

Regression Statistics	
Multiple R	0.323811
R Square	0.104854
Adjusted R Square	0.035996
Standard Error	2.903589
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	12.8382	12.8382	1.522768	0.239045
Residual	13	109.6008	8.430832		
Total	14	122.439			

Table B. 70: Regression statistics for the proportion of quality type 5 of CEDs from I-Syngenta from 2002-2016

Regression Statistics	
Multiple R	0.419291
R Square	0.175805
Adjusted R Square	0.112406
Standard Error	11.43335

Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	362.4869	362.4869	2.77297	0.11977
Residual	13	1699.38	130.7215		
Total	14	2061.867			

B.3.9 Quality analysis of P-BASF

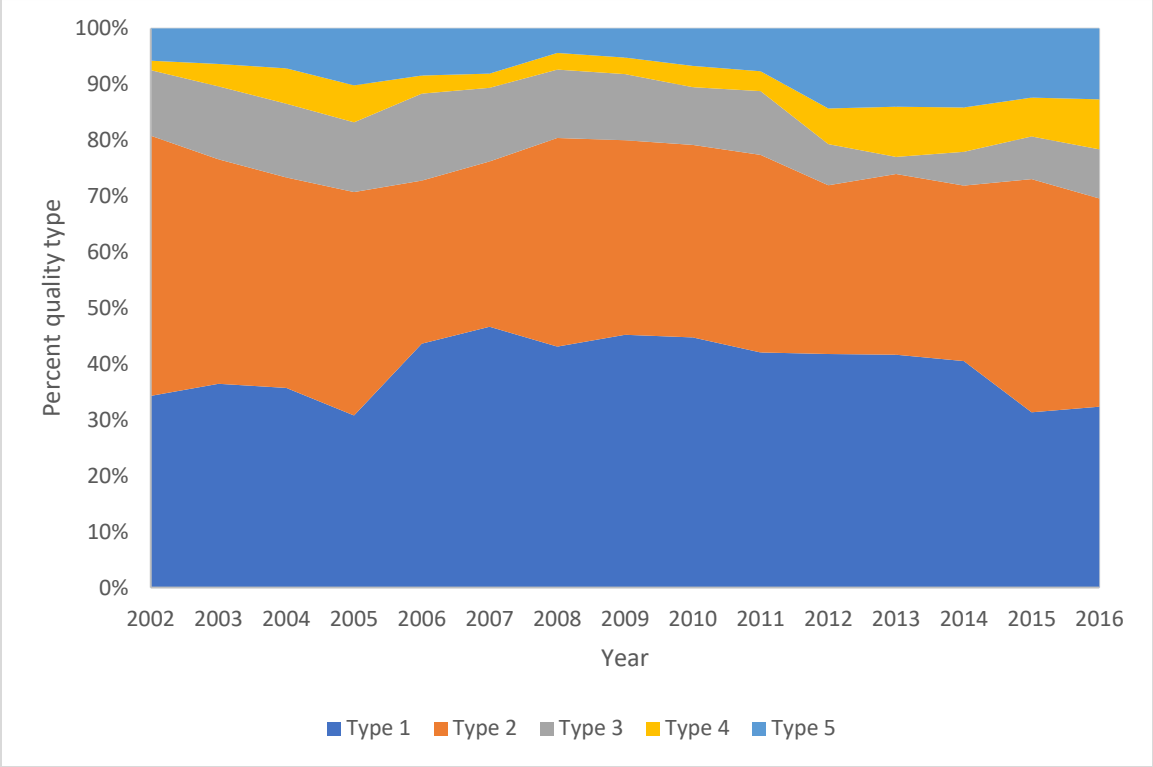

Figure B. 24: Quality composition of disclosure from P-BASF from 2002-2016. Type 1 (p=0.914266), Type 2 (p=0.213162), Type 3 (p=0.00116), Type 4 (p=0.009394), Type 5 (p=0.00334).

Table B. 71: Regression statistics for the proportion of quality type 1 of CEDs from P-BASF from 2002-2016

Regression Statistics	
Multiple R	0.030432
R Square	0.000926

Adjusted R Square	-0.07593
Standard Error	5.56087
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.372631	0.372631	0.01205	0.914266
Residual	13	402.0026	30.92328		
Total	14	402.3753			

Table B. 72: Regression statistics for the proportion of quality type 2 of CEDs from P-BASF from 2002-2016

Regression Statistics	
Multiple R	0.341285
R Square	0.116475
Adjusted R Square	0.048512
Standard Error	4.827269
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	39.93571	39.93571	1.713793	0.213162
Residual	13	302.9328	23.30252		
Total	14	342.8685			

Table B. 73: Regression statistics for the proportion of quality type 3 of CEDs from P-BASF from 2002-2016

Regression Statistics	
Multiple R	0.754187
R Square	0.568798

Adjusted R Square	0.535628
Standard Error	2.258385
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	87.46126	87.46126	17.14826	0.00116
Residual	13	66.30391	5.100301		
Total	14	153.7652			

Table B. 74: Regression statistics for the proportion of quality type 4 of CEDs from P-BASF from 2002-2016

Regression Statistics	
Multiple R	0.64519
R Square	0.41627
Adjusted R Square	0.371368
Standard Error	1.925765
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	34.38055	34.38055	9.270571	0.009394
Residual	13	48.2114	3.708569		
Total	14	82.59195			

Table B. 75: Regression statistics for the proportion of quality type 5 of CEDs from P-BASF from 2002-2016

Regression Statistics	
Multiple R	0.704865
R Square	0.496834
Adjusted R Square	0.458129
Standard Error	2.567163

Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	84.59613	84.59613	12.83641	0.00334
Residual	13	85.67424	6.590327		
Total	14	170.2704			

B.3.10 Quality analysis of P-Bayer

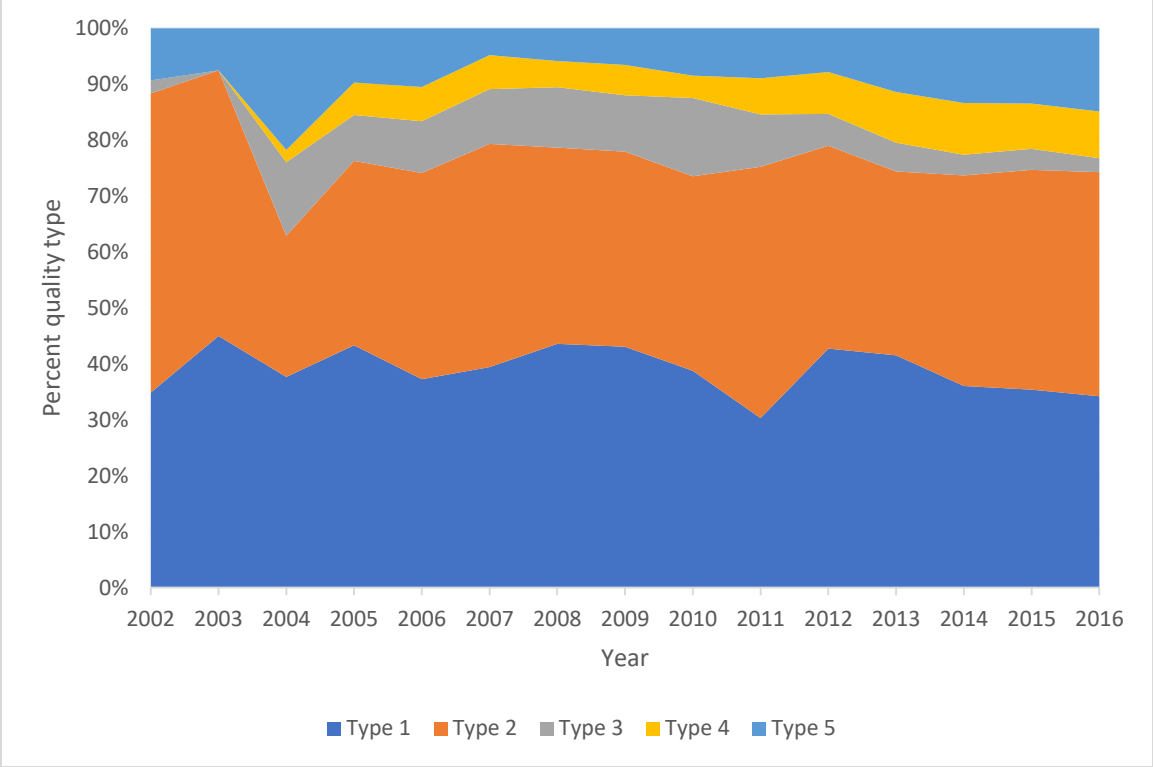

Figure B. 25: Quality composition of disclosure from P-Bayer from 2002-2016. Type 1 (p=0.25242), Type 2 (p=0.534258), Type 3 (p=0.55123), Type 4 (p=3.16E-05), Type 5 (p=0.576412).

Table B. : Regression statistics for the proportion of quality type 1 of CEDs from P-Bayer from 2002-2016

Regression Statistics	
Multiple R	0.315242
R Square	0.099377
Adjusted R Square	0.030099
Standard Error	4.198206

Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	25.28226	25.28226	1.43446	0.25242
Residual	13	229.1241	17.62493		
Total	14	254.4064			

Table B. 76: Regression statistics for the proportion of quality type 2 of CEDs from P-Bayer from 2002-2016

Regression Statistics	
Multiple R	0.174366
R Square	0.030403
Adjusted R Square	-0.04418
Standard Error	6.88048
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	19.29797	19.29797	0.407637	0.534258
Residual	13	615.433	47.341		
Total	14	634.731			

Table B. 77: Regression statistics for the proportion of quality type 3 of CEDs from P-Bayer from 2002-2016

Regression Statistics	
Multiple R	0.167287
R Square	0.027985
Adjusted R Square	-0.04679
Standard Error	4.304475
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	6.934859	6.934859	0.37428	0.55123
Residual	13	240.8706	18.52851		
Total	14	247.8055			

Table B. 78: Regression statistics for the proportion of quality type 4 of CEDs from P-Bayer from 2002-2016

Regression Statistics	
Multiple R	0.864826
R Square	0.747923
Adjusted R Square	0.728533
Standard Error	1.535661
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	90.96171	90.96171	38.57162	3.16E-05
Residual	13	30.65731	2.358255		
Total	14	121.619			

Table B. 79: Regression statistics for the proportion of quality type 5 of CEDs from P-Bayer from 2002-2016

Regression Statistics	
Multiple R	0.156956
R Square	0.024635
Adjusted R Square	-0.05039
Standard Error	4.392755
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	6.335886	6.335886	0.328347	0.576412
Residual	13	250.8518	19.29629		
Total	14	257.1877			

B.3.11 P-Monsanto

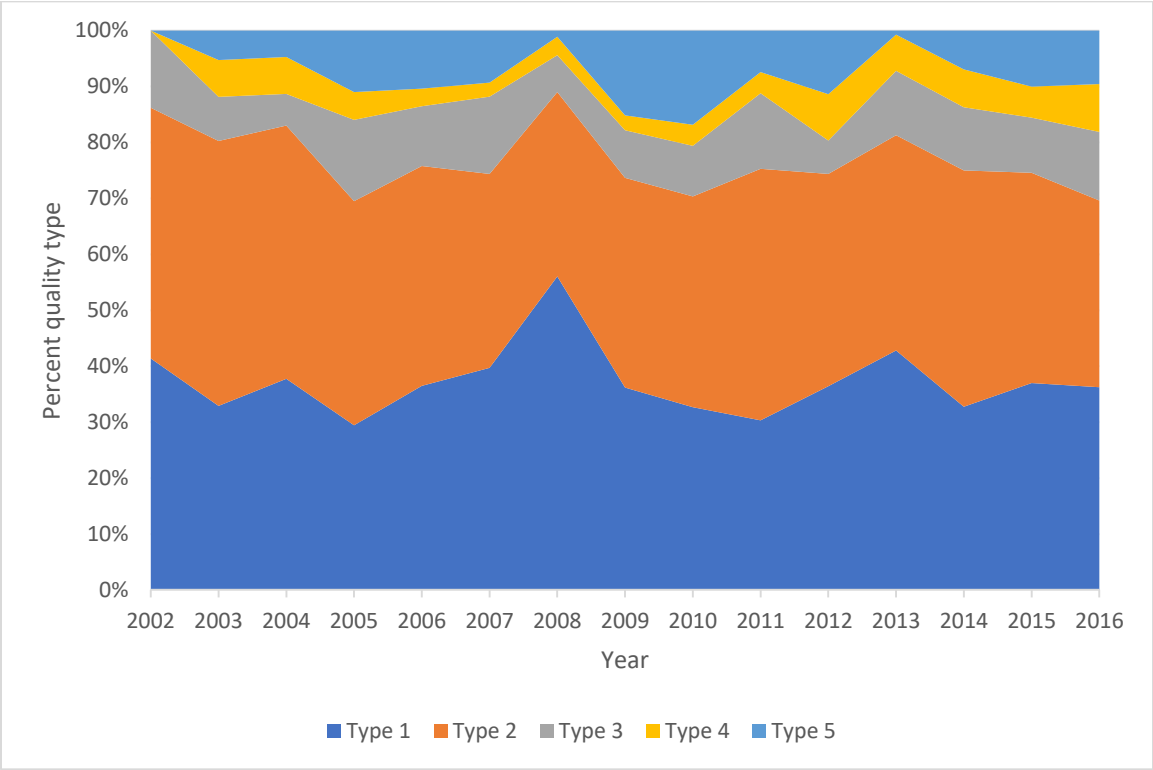

Figure B. 26: Quality composition of disclosure from P-Monsanto from 2002-2016. Type 1 (p=0.82403), Type 2 (p=0.0595), Type 3 (p=0.926843), Type 4 (p=0.042729), Type 5 (p=0.354159).

Table B. 80: Regression statistics for the proportion of quality type 1 of CEDs from P-Monsanto from 2002-2016

Regression Statistics	
Multiple R	0.062807
R Square	0.003945
Adjusted R Square	-0.07267
Standard Error	6.668856
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2.289681	2.289681	0.051484	0.82403
Residual	13	578.1573	44.47364		
Total	14	580.447			

Table B. 81: Regression statistics for the proportion of quality type 2 of CEDs from P-Monsanto from 2002-2016

Regression Statistics	
Multiple R	0.496929
R Square	0.246938
Adjusted R Square	0.18901
Standard Error	4.021525
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	68.94173	68.94173	4.262856	0.0595
Residual	13	210.2446	16.17266		
Total	14	279.1863			

Table B. 82: Regression statistics for the proportion of quality type 3 of CEDs from P-Monsanto from 2002-2016

Regression Statistics	
Multiple R	0.025955
R Square	0.000674
Adjusted R Square	-0.0762

Standard Error	3.08808
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.083571	0.083571	0.008764	0.926843
Residual	13	123.9711	9.536236		
Total	14	124.0546			

Table B. 83: Regression statistics for the proportion of quality type 4 of CEDs from P-Monsanto from 2002-2016

Regression Statistics	
Multiple R	0.528718
R Square	0.279543
Adjusted R Square	0.224123
Standard Error	2.103783
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	22.32469	22.32469	5.044098	0.042729
Residual	13	57.53674	4.425903		
Total	14	79.86143			

Table B. 84: Regression statistics for the proportion of quality type 5 of CEDs from P-Monsanto from 2002-2016

Regression Statistics	
Multiple R	0.257505
R Square	0.066309
Adjusted R Square	-0.00551
Standard Error	4.997967
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	23.06206	23.06206	0.923233	0.354159
Residual	13	324.7357	24.97967		
Total	14	347.7978			

B.3.12 Quality analysis of P-Syngenta

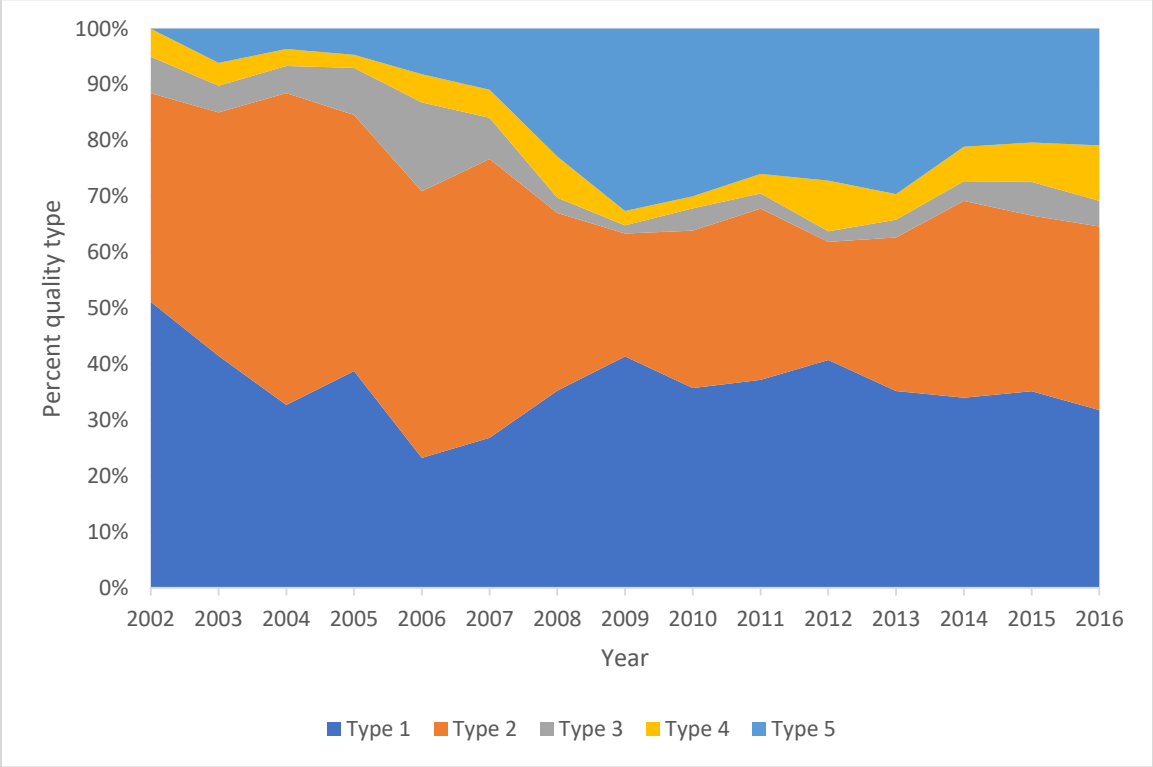

Figure B. 27: Quality composition of disclosure from P-Syngenta from 2002-2016. Type 1(p=0.345442), Type 2 (p=0.013754), Type 3 (p=0.168384), Type 4 (p=0.038067), Type 5 (p=0.001349).

Table B. 85: Regression statistics for the proportion of quality type 1 of CEDs from P-Syngenta from 2002-2016

Regression Statistics	
Multiple R	0.262041
R Square	0.068666
Adjusted R Square	-0.00298
Standard Error	6.562176
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*

Regression	1	41.27361	41.27361	0.958466	0.345442
Residual	13	559.808	43.06215		
Total	14	601.0816			

Table B. 86: Regression statistics for the proportion of quality type 2 of CEDs from P-Syngenta from 2002-2016

Regression Statistics	
Multiple R	0.61962
R Square	0.383929
Adjusted R Square	0.336538
Standard Error	8.441169
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	577.2553	577.2553	8.10145	0.013754
Residual	13	926.2933	71.25333		
Total	14	1503.549			

Table B. 87: Regression statistics for the proportion of quality type 3 of CEDs from P-Syngenta from 2002-2016

Regression Statistics	
Multiple R	0.375039
R Square	0.140655
Adjusted R Square	0.074551
Standard Error	3.432948
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	25.07632	25.07632	2.127793	0.168384

Residual	13	153.2067	11.78513
Total	14	178.283	

Table B. 88: Regression statistics for the proportion of quality type 4 of CEDs from P-Syngenta from 2002-2016

Regression Statistics	
Multiple R	0.53918
R Square	0.290715
Adjusted R Square	0.236155
Standard Error	2.086543
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	23.19769	23.19769	5.328317	0.038067
Residual	13	56.59759	4.353661		
Total	14	79.79528			

Table B. 89: Regression statistics for the proportion of quality type 5 of CEDs from P-Syngenta from 2002-2016

Regression Statistics	
Multiple R	0.747786
R Square	0.559184
Adjusted R Square	0.525275
Standard Error	7.545606
Observations	15

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	938.9212	938.9212	16.49077	0.001349
Residual	13	740.1702	56.93617		

Total	14	1679.091

B.4 Coder Reliability

Results from coder reliability which was calculated using statistics calculator Dfreelon online statistics calculator.

Table B. 90: Intra-Coder reliability

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
Variable 1 (cols 1 & 2)	100	1	1	1	6	0	6	12
Variable 2 (cols 3 & 4)	83.33333	0.555556	0.571429	0.592593	5	1	6	12
Variable 3 (cols 5 & 6)	100	1	1	1	6	0	6	12
Variable 4 (cols 7 & 8)	100	1	1	1	6	0	6	12
Variable 5 (cols 9 & 10)	100	1	1	1	6	0	6	12
Variable 6 (cols 11 & 12)	83.33333	0.675676	0.684211	0.702703	5	1	6	12
Variable 7 (cols 13 & 14)	100	1	1	1	6	0	6	12
Variable 8 (cols 15 & 16)	100	1	1	1	6	0	6	12
Variable 9 (cols 17 & 18)	83.33333	-0.09091	6.66E-16	0	5	1	6	12
Variable 10 (cols 19 & 20)	100	1	1	1	6	0	6	12
Variable 11 (cols 21 & 22)	100	1	1	1	6	0	6	12
Variable 12 (cols 23 & 24)	100	1	1	1	6	0	6	12
Variable 13 (cols 25 & 26)	83.33333	-0.09091	6.66E-16	0	5	1	6	12
Variable 14 (cols 27 & 28)	100	1	1	1	6	0	6	12
Variable 15 (cols 29 & 30)	100	1	1	1	6	0	6	12
Variable 16 (cols 31 & 32)	83.33333	-0.09091	6.66E-16	0	5	1	6	12

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
Variable 17 (cols 33 & 34)	100	1	1	1	6	0	6	12
Variable 18 (cols 35 & 36)	100	1	1	1	6	0	6	12
Variable 19 (cols 37 & 38)	100	1	1	1	6	0	6	12
Variable 20 (cols 39 & 40)	100	1	1	1	6	0	6	12
Variable 21 (cols 41 & 42)	100	1	1	1	6	0	6	12
Variable 22 (cols 43 & 44)	83.33333	0.755102	0.76	0.77551	5	1	6	12
Variable 23 (cols 45 & 46)	83.33333	-0.09091	6.66E-16	0	5	1	6	12
Variable 24 (cols 47 & 48)	100	1	1	1	6	0	6	12
Variable 25 (cols 49 & 50)	100	1	1	1	6	0	6	12
Variable 26 (cols 51 & 52)	100	1	1	1	6	0	6	12
Variable 27 (cols 53 & 54)	100	1	1	1	6	0	6	12
Variable 28 (cols 55 & 56)	83.33333	0.428571	0.454545	0.47619	5	1	6	12
Variable 29 (cols 57 & 58)	83.33333	0.428571	0.454545	0.47619	5	1	6	12
Variable 30 (cols 59 & 60)	83.33333	0.428571	0.454545	0.47619	5	1	6	12
Variable 31 (cols 61 & 62)	100	1	1	1	6	0	6	12
Variable 32 (cols 63 & 64)	100	1	1	1	6	0	6	12
Variable 33 (cols 65 & 66)	100	1	1	1	6	0	6	12
Variable 34 (cols 67 &	100	1	1	1	6	0	6	12

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
68)								
Variable 35 (cols 69 & 70)	100	1	1	1	6	0	6	12
Variable 36 (cols 71 & 72)	100	1	1	1	6	0	6	12
Variable 37 (cols 73 & 74)	100	1	1	1	6	0	6	12
Variable 38 (cols 75 & 76)	100	1	1	1	6	0	6	12
Variable 39 (cols 77 & 78)	100	1	1	1	6	0	6	12
Variable 40 (cols 79 & 80)	100	1	1	1	6	0	6	12
Variable 41 (cols 81 & 82)	100	1	1	1	6	0	6	12
Variable 42 (cols 83 & 84)	100	1	1	1	6	0	6	12
Variable 43 (cols 85 & 86)	100	1	1	1	6	0	6	12
Variable 44 (cols 87 & 88)	100	1	1	1	6	0	6	12
Variable 45 (cols 89 & 90)	100	1	1	1	6	0	6	12
Variable 46 (cols 91 & 92)	100	1	1	1	6	0	6	12
Variable 47 (cols 93 & 94)	100	1	1	1	6	0	6	12
Variable 48 (cols 95 & 96)	100	1	1	1	6	0	6	12
Variable 49 (cols 97 & 98)	100	1	1	1	6	0	6	12
Variable 50 (cols 99 & 100)	100	1	1	1	6	0	6	12
Variable 51 (cols 101 & 102)	100	1	1	1	6	0	6	12

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
Variable 52 (cols 103 & 104)	100	1	1	1	6	0	6	12
Variable 53 (cols 105 & 106)	100	1	1	1	6	0	6	12
Variable 54 (cols 107 & 108)	100	1	1	1	6	0	6	12
Variable 55 (cols 109 & 110)	100	1	1	1	6	0	6	12
Variable 56 (cols 111 & 112)	100	1	1	1	6	0	6	12
Variable 57 (cols 113 & 114)	100	1	1	1	6	0	6	12
Variable 58 (cols 115 & 116)	100	1	1	1	6	0	6	12
Variable 59 (cols 117 & 118)	100	1	1	1	6	0	6	12
Variable 60 (cols 119 & 120)	100	1	1	1	6	0	6	12
Variable 61 (cols 121 & 122)	100	1	1	1	6	0	6	12
Variable 62 (cols 123 & 124)	83.33333	-0.09091	6.66E-16	0	5	1	6	12
Variable 63 (cols 125 & 126)	100	1	1	1	6	0	6	12
Variable 64 (cols 127 & 128)	100	1	1	1	6	0	6	12
Variable 65 (cols 129 & 130)	100	1	1	1	6	0	6	12
Variable 66 (cols 131 & 132)	100	1	1	1	6	0	6	12
Variable 67 (cols 133 & 134)	100	1	1	1	6	0	6	12
Variable 68 (cols 135 & 136)	100	1	1	1	6	0	6	12
Variable 69 (cols 137 &	100	1	1	1	6	0	6	12

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
138)								
Variable 70 (cols 139 & 140)	100	1	1	1	6	0	6	12
Variable 71 (cols 141 & 142)	100	1	1	1	6	0	6	12
Variable 72 (cols 143 & 144)	100	1	1	1	6	0	6	12
Variable 73 (cols 145 & 146)	100	1	1	1	6	0	6	12
Variable 74 (cols 147 & 148)	100	1	1	1	6	0	6	12
Variable 75 (cols 149 & 150)	100	1	1	1	6	0	6	12
Variable 76 (cols 151 & 152)	100	1	1	1	6	0	6	12
Variable 77 (cols 153 & 154)	83.33333	-0.09091	6.66E-16	0	5	1	6	12
Variable 78 (cols 155 & 156)	100	1	1	1	6	0	6	12
Variable 79 (cols 157 & 158)	100	1	1	1	6	0	6	12
Variable 80 (cols 159 & 160)	100	1	1	1	6	0	6	12
Variable 81 (cols 161 & 162)	83.33333	0.773585	0.777778	0.792453	5	1	6	12
Variable 82 (cols 163 & 164)	100	1	1	1	6	0	6	12
Variable 83 (cols 165 & 166)	83.33333	-0.09091	6.66E-16	0	5	1	6	12
Variable 84 (cols 167 & 168)	100	1	1	1	6	0	6	12
Variable 85 (cols 169 & 170)	100	1	1	1	6	0	6	12
Variable 86 (cols 171 & 172)	100	1	1	1	6	0	6	12

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
Variable 87 (cols 173 & 174)	100	1	1	1	6	0	6	12
Variable 88 (cols 175 & 176)	100	1	1	1	6	0	6	12
Variable 89 (cols 177 & 178)	83.33333	-0.09091	6.66E-16	0	5	1	6	12
Variable 90 (cols 179 & 180)	100	1	1	1	6	0	6	12
Variable 91 (cols 181 & 182)	100	1	1	1	6	0	6	12
Variable 92 (cols 183 & 184)	100	1	1	1	6	0	6	12
Variable 93 (cols 185 & 186)	100	1	1	1	6	0	6	12
Variable 94 (cols 187 & 188)	100	1	1	1	6	0	6	12
Variable 95 (cols 189 & 190)	100	1	1	1	6	0	6	12
Variable 96 (cols 191 & 192)	83.33333	0.428571	0.454545	0.47619	5	1	6	12
Variable 97 (cols 193 & 194)	100	1	1	1	6	0	6	12
Variable 98 (cols 195 & 196)	100	1	1	1	6	0	6	12
Variable 99 (cols 197 & 198)	100	1	1	1	6	0	6	12
Variable 100 (cols 199 & 200)	100	1	1	1	6	0	6	12
Variable 101 (cols 201 & 202)	100	1	1	1	6	0	6	12
Variable 102 (cols 203 & 204)	100	1	1	1	6	0	6	12
Variable 103 (cols 205 & 206)	100	1	1	1	6	0	6	12
Variable 104 (cols 207 &	100	1	1	1	6	0	6	12

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
208)								
Variable 105 (cols 209 & 210)	100	1	1	1	6	0	6	12
Variable 106 (cols 211 & 212)	100	1	1	1	6	0	6	12
Variable 107 (cols 213 & 214)	100	1	1	1	6	0	6	12
Variable 108 (cols 215 & 216)	100	1	1	1	6	0	6	12
Variable 109 (cols 217 & 218)	100	1	1	1	6	0	6	12
Variable 110 (cols 219 & 220)	100	1	1	1	6	0	6	12
Variable 111 (cols 221 & 222)	100	1	1	1	6	0	6	12
Variable 112 (cols 223 & 224)	100	1	1	1	6	0	6	12
Variable 113 (cols 225 & 226)	100	1	1	1	6	0	6	12
Variable 114 (cols 227 & 228)	100	1	1	1	6	0	6	12
Variable 115 (cols 229 & 230)	100	1	1	1	6	0	6	12
Variable 116 (cols 231 & 232)	83.33333	0.657143	0.666667	0.685714	5	1	6	12
Variable 117 (cols 233 & 234)	100	1	1	1	6	0	6	12
Variable 118 (cols 235 & 236)	100	1	1	1	6	0	6	12
Variable 119 (cols 237 & 238)	83.33333	-0.09091	6.66E-16	0	5	1	6	12
Variable 120 (cols 239 & 240)	100	1	1	1	6	0	6	12
Variable 121 (cols 241 & 242)	66.66667	0.586207	0.6	0.62069	4	2	6	12

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
Variable 122 (cols 243 & 244)	100	1	1	1	6	0	6	12
Variable 123 (cols 245 & 246)	100	1	1	1	6	0	6	12
Variable 124 (cols 247 & 248)	100	1	1	1	6	0	6	12
Variable 125 (cols 249 & 250)	100	1	1	1	6	0	6	12
Variable 126 (cols 251 & 252)	83.33333	0.79661	0.8	0.813559	5	1	6	12
Variable 127 (cols 253 & 254)	66.66667	0.571429	0.586207	0.607143	4	2	6	12
Variable 128 (cols 255 & 256)	100	1	1	1	6	0	6	12
Variable 129 (cols 257 & 258)	100	1	1	1	6	0	6	12
Variable 130 (cols 259 & 260)	100	1	1	1	6	0	6	12
Variable 131 (cols 261 & 262)	100	1	1	1	6	0	6	12
Variable 132 (cols 263 & 264)	100	1	1	1	6	0	6	12
Variable 133 (cols 265 & 266)	100	1	1	1	6	0	6	12
Variable 134 (cols 267 & 268)	100	1	1	1	6	0	6	12
Variable 135 (cols 269 & 270)	100	1	1	1	6	0	6	12
Variable 136 (cols 271 & 272)	83.33333	0.586207	0.6	0.62069	5	1	6	12
Variable 137 (cols 273 & 274)	100	1	1	1	6	0	6	12
Variable 138 (cols 275 & 276)	100	1	1	1	6	0	6	12
Variable 139 (cols 277 &	83.33333	0.428571	0.454545	0.47619	5	1	6	12

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
278)								
Variable 140 (cols 279 & 280)	100	1	1	1	6	0	6	12
Variable 141 (cols 281 & 282)	66.66667	0.454545	0.5	0.5	4	2	6	12
Variable 142 (cols 283 & 284)	100	1	1	1	6	0	6	12
Variable 143 (cols 285 & 286)	100	1	1	1	6	0	6	12
Variable 144 (cols 287 & 288)	100	1	1	1	6	0	6	12
Variable 145 (cols 289 & 290)	100	1	1	1	6	0	6	12
Variable 146 (cols 291 & 292)	83.33333	-0.09091	6.66E-16	0	5	1	6	12
Variable 147 (cols 293 & 294)	100	1	1	1	6	0	6	12
Variable 148 (cols 295 & 296)	100	1	1	1	6	0	6	12
Variable 149 (cols 297 & 298)	100	1	1	1	6	0	6	12
Variable 150 (cols 299 & 300)	83.33333	-0.09091	6.66E-16	0	5	1	6	12
Variable 151 (cols 301 & 302)	100	1	1	1	6	0	6	12
Variable 152 (cols 303 & 304)	100	1	1	1	6	0	6	12
Variable 153 (cols 305 & 306)	83.33333	0.657143	0.666667	0.685714	5	1	6	12
Variable 154 (cols 307 & 308)	100	1	1	1	6	0	6	12
Variable 155 (cols 309 & 310)	100	1	1	1	6	0	6	12
Variable 156 (cols 311 & 312)	100	1	1	1	6	0	6	12

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
Variable 157 (cols 313 & 314)	100	1	1	1	6	0	6	12
Variable 158 (cols 315 & 316)	100	1	1	1	6	0	6	12
Variable 159 (cols 317 & 318)	100	1	1	1	6	0	6	12
Variable 160 (cols 319 & 320)	100	1	1	1	6	0	6	12
Variable 161 (cols 321 & 322)	100	1	1	1	6	0	6	12
Variable 162 (cols 323 & 324)	100	1	1	1	6	0	6	12
Variable 163 (cols 325 & 326)	100	1	1	1	6	0	6	12
Variable 164 (cols 327 & 328)	100	1	1	1	6	0	6	12
Variable 165 (cols 329 & 330)	100	1	1	1	6	0	6	12
Variable 166 (cols 331 & 332)	83.33333	0.744681	0.75	0.765957	5	1	6	12
Variable 167 (cols 333 & 334)	66.66667	0.5	0.5	0.541667	4	2	6	12
Variable 168 (cols 335 & 336)	100	1	1	1	6	0	6	12
Variable 169 (cols 337 & 338)	100	1	1	1	6	0	6	12
Variable 170 (cols 339 & 340)	100	1	1	1	6	0	6	12
Variable 171 (cols 341 & 342)	83.33333	0.675676	0.684211	0.702703	5	1	6	12
Variable 172 (cols 343 & 344)	83.33333	0.707317	0.714286	0.731707	5	1	6	12
Variable 173 (cols 345 & 346)	100	1	1	1	6	0	6	12
Variable 174 (cols 347 &	100	1	1	1	6	0	6	12

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
348)								
Variable 175 (cols 349 & 350)	100	1	1	1	6	0	6	12
Variable 176 (cols 351 & 352)	100	1	1	1	6	0	6	12
Variable 177 (cols 353 & 354)	100	1	1	1	6	0	6	12
Variable 178 (cols 355 & 356)	100	1	1	1	6	0	6	12
Variable 179 (cols 357 & 358)	100	1	1	1	6	0	6	12
Variable 180 (cols 359 & 360)	100	1	1	1	6	0	6	12
Variable 181 (cols 361 & 362)	100	1	1	1	6	0	6	12
Variable 182 (cols 363 & 364)	100	1	1	1	6	0	6	12
Variable 183 (cols 365 & 366)	100	1	1	1	6	0	6	12
Variable 184 (cols 367 & 368)	100	1	1	1	6	0	6	12
Variable 185 (cols 369 & 370)	100	1	1	1	6	0	6	12
Variable 186 (cols 371 & 372)	83.33333	0.79661	0.8	0.813559	5	1	6	12
Variable 187 (cols 373 & 374)	100	1	1	1	6	0	6	12
Variable 188 (cols 375 & 376)	100	1	1	1	6	0	6	12
Variable 189 (cols 377 & 378)	100	1	1	1	6	0	6	12
Variable 190 (cols 379 & 380)	100	1	1	1	6	0	6	12
Variable 191 (cols 381 & 382)	100	1	1	1	6	0	6	12

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
Variable 192 (cols 383 & 384)	100	1	1	1	6	0	6	12
Variable 193 (cols 385 & 386)	100	1	1	1	6	0	6	12
Variable 194 (cols 387 & 388)	100	1	1	1	6	0	6	12
Variable 195 (cols 389 & 390)	100	1	1	1	6	0	6	12
Variable 196 (cols 391 & 392)	100	1	1	1	6	0	6	12
Variable 197 (cols 393 & 394)	83.33333	-0.09091	6.66E-16	0	5	1	6	12
Variable 198 (cols 395 & 396)	83.33333	0.428571	0.454545	0.47619	5	1	6	12
Variable 199 (cols 397 & 398)	100	1	1	1	6	0	6	12
Variable 200 (cols 399 & 400)	100	1	1	1	6	0	6	12
Variable 201 (cols 401 & 402)	100	1	1	1	6	0	6	12
Variable 202 (cols 403 & 404)	100	1	1	1	6	0	6	12
Variable 203 (cols 405 & 406)	100	1	1	1	6	0	6	12
Variable 204 (cols 407 & 408)	100	1	1	1	6	0	6	12
Variable 205 (cols 409 & 410)	100	1	1	1	6	0	6	12
Variable 206 (cols 411 & 412)	100	1	1	1	6	0	6	12
Variable 207 (cols 413 & 414)	100	1	1	1	6	0	6	12
Variable 208 (cols 415 & 416)	100	1	1	1	6	0	6	12
Variable 209 (cols 417 &	100	1	1	1	6	0	6	12

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
418)								
Variable 210 (cols 419 & 420)	100	1	1	1	6	0	6	12
Variable 211 (cols 421 & 422)	83.33333	-0.09091	6.66E-16	0	5	1	6	12
Variable 212 (cols 423 & 424)	100	1	1	1	6	0	6	12
Variable 213 (cols 425 & 426)	100	1	1	1	6	0	6	12
Variable 214 (cols 427 & 428)	100	1	1	1	6	0	6	12
Variable 215 (cols 429 & 430)	100	1	1	1	6	0	6	12
Variable 216 (cols 431 & 432)	100	1	1	1	6	0	6	12
Variable 217 (cols 433 & 434)	100	1	1	1	6	0	6	12
Variable 218 (cols 435 & 436)	100	1	1	1	6	0	6	12
Variable 219 (cols 437 & 438)	100	1	1	1	6	0	6	12
Variable 220 (cols 439 & 440)	100	1	1	1	6	0	6	12
Variable 221 (cols 441 & 442)	100	1	1	1	6	0	6	12
Variable 222 (cols 443 & 444)	100	1	1	1	6	0	6	12
Variable 223 (cols 445 & 446)	100	1	1	1	6	0	6	12
Variable 224 (cols 447 & 448)	100	1	1	1	6	0	6	12
Variable 225 (cols 449 & 450)	100	1	1	1	6	0	6	12
Variable 226 (cols 451 & 452)	100	1	1	1	6	0	6	12

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
Variable 227 (cols 453 & 454)	100	1	1	1	6	0	6	12
Variable 228 (cols 455 & 456)	100	1	1	1	6	0	6	12
Variable 229 (cols 457 & 458)	100	1	1	1	6	0	6	12
Variable 230 (cols 459 & 460)	100	1	1	1	6	0	6	12
Variable 231 (cols 461 & 462)	100	1	1	1	6	0	6	12
Variable 232 (cols 463 & 464)	100	1	1	1	6	0	6	12
Variable 233 (cols 465 & 466)	100	1	1	1	6	0	6	12
Variable 234 (cols 467 & 468)	100	1	1	1	6	0	6	12
Variable 235 (cols 469 & 470)	100	1	1	1	6	0	6	12
Variable 236 (cols 471 & 472)	83.33333	0.803279	0.806452	0.819672	5	1	6	12
Variable 237 (cols 473 & 474)	83.33333	0.781818	0.785714	0.8	5	1	6	12
Variable 238 (cols 475 & 476)	83.33333	0.428571	0.454545	0.47619	5	1	6	12
Variable 239 (cols 477 & 478)	83.33333	0.755102	0.76	0.77551	5	1	6	12
Variable 240 (cols 479 & 480)	83.33333	-0.09091	6.66E-16	0	5	1	6	12
Variable 241 (cols 481 & 482)	100	1	1	1	6	0	6	12
Variable 242 (cols 483 & 484)	100	1	1	1	6	0	6	12
Variable 243 (cols 485 & 486)	100	1	1	1	6	0	6	12
Variable 244 (cols 487 &	100	1	1	1	6	0	6	12

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
488)								
Variable 245 (cols 489 & 490)	100	1	1	1	6	0	6	12
Variable 246 (cols 491 & 492)	100	1	1	1	6	0	6	12
Variable 247 (cols 493 & 494)	100	1	1	1	6	0	6	12
Variable 248 (cols 495 & 496)	83.33333	0.586207	0.6	0.62069	5	1	6	12
Variable 249 (cols 497 & 498)	100	1	1	1	6	0	6	12
Variable 250 (cols 499 & 500)	100	1	1	1	6	0	6	12
Variable 251 (cols 501 & 502)	83.33333	0.428571	0.454545	0.47619	5	1	6	12
Variable 252 (cols 503 & 504)	100	1	1	1	6	0	6	12
Variable 253 (cols 505 & 506)	100	1	1	1	6	0	6	12
Variable 254 (cols 507 & 508)	100	1	1	1	6	0	6	12
Variable 255 (cols 509 & 510)	100	1	1	1	6	0	6	12
Variable 256 (cols 511 & 512)	100	1	1	1	6	0	6	12
Variable 257 (cols 513 & 514)	83.33333	-0.09091	6.66E-16	0	5	1	6	12
Variable 258 (cols 515 & 516)	100	1	1	1	6	0	6	12
Variable 259 (cols 517 & 518)	100	1	1	1	6	0	6	12
Variable 260 (cols 519 & 520)	100	1	1	1	6	0	6	12
Variable 261 (cols 521 & 522)	83.33333	0.428571	0.454545	0.47619	5	1	6	12

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
Variable 262 (cols 523 & 524)	100	1	1	1	6	0	6	12
Variable 263 (cols 525 & 526)	100	1	1	1	6	0	6	12
Variable 264 (cols 527 & 528)	100	1	1	1	6	0	6	12
Variable 265 (cols 529 & 530)	100	1	1	1	6	0	6	12
Variable 266 (cols 531 & 532)	100	1	1	1	6	0	6	12
Variable 267 (cols 533 & 534)	100	1	1	1	6	0	6	12
Variable 268 (cols 535 & 536)	100	1	1	1	6	0	6	12
Variable 269 (cols 537 & 538)	100	1	1	1	6	0	6	12
Variable 270 (cols 539 & 540)	100	1	1	1	6	0	6	12
Variable 271 (cols 541 & 542)	100	1	1	1	6	0	6	12
Variable 272 (cols 543 & 544)	100	1	1	1	6	0	6	12
Variable 273 (cols 545 & 546)	100	1	1	1	6	0	6	12
Variable 274 (cols 547 & 548)	100	1	1	1	6	0	6	12
Variable 275 (cols 549 & 550)	100	1	1	1	6	0	6	12
Variable 276 (cols 551 & 552)	100	1	1	1	6	0	6	12
Variable 277 (cols 553 & 554)	100	1	1	1	6	0	6	12
Variable 278 (cols 555 & 556)	100	1	1	1	6	0	6	12
Variable 279 (cols 557 &	100	1	1	1	6	0	6	12

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
558)								
Variable 280 (cols 559 & 560)	100	1	1	1	6	0	6	12
Variable 281 (cols 561 & 562)	100	1	1	1	6	0	6	12
Variable 282 (cols 563 & 564)	100	1	1	1	6	0	6	12
Variable 283 (cols 565 & 566)	100	1	1	1	6	0	6	12
Variable 284 (cols 567 & 568)	100	1	1	1	6	0	6	12
Variable 285 (cols 569 & 570)	100	1	1	1	6	0	6	12
Variable 286 (cols 571 & 572)	100	1	1	1	6	0	6	12
Variable 287 (cols 573 & 574)	100	1	1	1	6	0	6	12
Variable 288 (cols 575 & 576)	100	1	1	1	6	0	6	12
Variable 289 (cols 577 & 578)	83.33333	0.428571	0.454545	0.47619	5	1	6	12
Variable 290 (cols 579 & 580)	100	1	1	1	6	0	6	12
Variable 291 (cols 581 & 582)	100	1	1	1	6	0	6	12
Variable 292 (cols 583 & 584)	100	1	1	1	6	0	6	12
Variable 293 (cols 585 & 586)	100	1	1	1	6	0	6	12
Variable 294 (cols 587 & 588)	83.33333	0.707317	0.714286	0.731707	5	1	6	12
Variable 295 (cols 589 & 590)	100	1	1	1	6	0	6	12

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
* * *			Krippendorf's Alpha	0.91004				

Table B. 91: Inter- User Reliability

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
Variable 1 (cols 1 & 2)	66.66667	0.551402	0.563636	0.570093	8	4	12	24
Variable 2 (cols 3 & 4)	91.66667	0.710843	0.714286	0.722892	11	1	12	24
Variable 3 (cols 5 & 6)	100	1	1	1	12	0	12	24
Variable 4 (cols 7 & 8)	91.66667	-0.04348	0	0	11	1	12	24
Variable 5 (cols 9 & 10)	100	1	1	1	12	0	12	24
Variable 6 (cols 11 & 12)	75	0.560976	0.571429	0.579268	9	3	12	24
Variable 7 (cols 13 & 14)	91.66667	0.838926	0.84	0.845638	11	1	12	24
Variable 8 (cols 15 & 16)	100	1	1	1	12	0	12	24
Variable 9 (cols 17 & 18)	100	1	1	1	12	0	12	24
Variable 10 (cols 19 & 20)	100	1	1	1	12	0	12	24
Variable 11 (cols 21 & 22)	83.33333	0.692308	0.692308	0.705128	10	2	12	24
Variable 12 (cols 23 & 24)	100	1	1	1	12	0	12	24
Variable 13 (cols 25 & 26)	100	1	1	1	12	0	12	24
Variable 14 (cols 27 & 28)	100	1	1	1	12	0	12	24
Variable 15 (cols 29 & 30)	100	1	1	1	12	0	12	24
Variable 16 (cols 31 & 32)	83.33333	0.707317	0.714286	0.719512	10	2	12	24
Variable 17 (cols 33 & 34)	91.6666	0.74736	0.75	0.757895	11	1	12	24

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
	7	8						
Variable 18 (cols 35 & 36)	91.66667	-0.04348	0	0	11	1	12	24
Variable 19 (cols 37 & 38)	91.66667	-0.04348	0	0	11	1	12	24
Variable 20 (cols 39 & 40)	100	1	1	1	12	0	12	24
Variable 21 (cols 41 & 42)	100	1	1	1	12	0	12	24
Variable 22 (cols 43 & 44)	91.66667	0.747368	0.75	0.757895	11	1	12	24
Variable 23 (cols 45 & 46)	100	1	1	1	12	0	12	24
Variable 24 (cols 47 & 48)	100	1	1	1	12	0	12	24
Variable 25 (cols 49 & 50)	100	1	1	1	12	0	12	24
Variable 26 (cols 51 & 52)	83.33333	0.707317	0.714286	0.719512	10	2	12	24
Variable 27 (cols 53 & 54)	100	1	1	1	12	0	12	24
Variable 28 (cols 55 & 56)	83.33333	0.707317	0.714286	0.719512	10	2	12	24
Variable 29 (cols 57 & 58)	100	1	1	1	12	0	12	24
Variable 30 (cols 59 & 60)	100	1	1	1	12	0	12	24
Variable 31 (cols 61 & 62)	83.33333	0.4	0.428571	0.425	10	2	12	24
Variable 32 (cols 63 & 64)	100	1	1	1	12	0	12	24
Variable 33 (cols 65 & 66)	100	1	1	1	12	0	12	24
Variable 34 (cols 67 & 68)	100	1	1	1	12	0	12	24
Variable 35 (cols 69 & 70)	100	1	1	1	12	0	12	24
Variable 36 (cols 71 & 72)	100	1	1	1	12	0	12	24
Variable 37 (cols 73 & 74)	100	1	1	1	12	0	12	24
Variable 38 (cols 75 & 76)	100	1	1	1	12	0	12	24
Variable 39 (cols 77 & 78)	100	1	1	1	12	0	12	24
Variable 40 (cols 79 & 80)	100	1	1	1	12	0	12	24

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
Variable 41 (cols 81 & 82)	91.66667	0.747368	0.75	0.757895	11	1	12	24
Variable 42 (cols 83 & 84)	100	1	1	1	12	0	12	24
Variable 43 (cols 85 & 86)	100	1	1	1	12	0	12	24
Variable 44 (cols 87 & 88)	100	1	1	1	12	0	12	24
Variable 45 (cols 89 & 90)	100	1	1	1	12	0	12	24
Variable 46 (cols 91 & 92)	91.66667	0.619048	0.625	0.634921	11	1	12	24
Variable 47 (cols 93 & 94)	83.33333	0.44186	0.454545	0.465116	10	2	12	24
Variable 48 (cols 95 & 96)	100	1	1	1	12	0	12	24
Variable 49 (cols 97 & 98)	100	1	1	1	12	0	12	24
Variable 50 (cols 99 & 100)	100	1	1	1	12	0	12	24
Variable 51 (cols 101 & 102)	100	1	1	1	12	0	12	24
Variable 52 (cols 103 & 104)	100	1	1	1	12	0	12	24
Variable 53 (cols 105 & 106)	100	1	1	1	12	0	12	24
Variable 54 (cols 107 & 108)	100	1	1	1	12	0	12	24
Variable 55 (cols 109 & 110)	100	1	1	1	12	0	12	24
Variable 56 (cols 111 & 112)	100	1	1	1	12	0	12	24
Variable 57 (cols 113 & 114)	100	1	1	1	12	0	12	24
Variable 58 (cols 115 & 116)	100	1	1	1	12	0	12	24
Variable 59 (cols 117 & 118)	100	1	1	1	12	0	12	24
Variable 60 (cols 119 & 120)	100	1	1	1	12	0	12	24

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
Variable 61 (cols 121 & 122)	100	1	1	1	12	0	12	24
Variable 62 (cols 123 & 124)	100	1	1	1	12	0	12	24
Variable 63 (cols 125 & 126)	100	1	1	1	12	0	12	24
Variable 64 (cols 127 & 128)	100	1	1	1	12	0	12	24
Variable 65 (cols 129 & 130)	100	1	1	1	12	0	12	24
Variable 66 (cols 131 & 132)	100	1	1	1	12	0	12	24
Variable 67 (cols 133 & 134)	100	1	1	1	12	0	12	24
Variable 68 (cols 135 & 136)	100	1	1	1	12	0	12	24
Variable 69 (cols 137 & 138)	100	1	1	1	12	0	12	24
Variable 70 (cols 139 & 140)	100	1	1	1	12	0	12	24
Variable 71 (cols 141 & 142)	100	1	1	1	12	0	12	24
Variable 72 (cols 143 & 144)	91.66667	0.813953	0.815385	0.821705	11	1	12	24
Variable 73 (cols 145 & 146)	100	1	1	1	12	0	12	24
Variable 74 (cols 147 & 148)	100	1	1	1	12	0	12	24
Variable 75 (cols 149 & 150)	100	1	1	1	12	0	12	24
Variable 76 (cols 151 & 152)	100	1	1	1	12	0	12	24
Variable 77 (cols 153 & 154)	91.66667	0.813953	0.815385	0.821705	11	1	12	24
Variable 78 (cols 155 &	91.6666	0.81395	0.815385	0.821705	11	1	12	24

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
156)	7	3						
Variable 79 (cols 157 & 158)	100	1	1	1	12	0	12	24
Variable 80 (cols 159 & 160)	100	1	1	1	12	0	12	24
Variable 81 (cols 161 & 162)	100	1	1	1	12	0	12	24
Variable 82 (cols 163 & 164)	91.66667	0.813953	0.815385	0.821705	11	1	12	24
Variable 83 (cols 165 & 166)	91.66667	0.813953	0.815385	0.821705	11	1	12	24
Variable 84 (cols 167 & 168)	100	1	1	1	12	0	12	24
Variable 85 (cols 169 & 170)	100	1	1	1	12	0	12	24
Variable 86 (cols 171 & 172)	83.33333	0.625	0.625	0.640625	10	2	12	24
Variable 87 (cols 173 & 174)	100	1	1	1	12	0	12	24
Variable 88 (cols 175 & 176)	100	1	1	1	12	0	12	24
Variable 89 (cols 177 & 178)	100	1	1	1	12	0	12	24
Variable 90 (cols 179 & 180)	100	1	1	1	12	0	12	24
Variable 91 (cols 181 & 182)	83.33333	0.586207	0.6	0.603448	10	2	12	24
Variable 92 (cols 183 & 184)	100	1	1	1	12	0	12	24
Variable 93 (cols 185 & 186)	91.66667	0.619048	0.625	0.634921	11	1	12	24
Variable 94 (cols 187 & 188)	91.66667	0.619048	0.625	0.634921	11	1	12	24
Variable 95 (cols 189 & 190)	100	1	1	1	12	0	12	24

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
Variable 96 (cols 191 & 192)	100	1	1	1	12	0	12	24
Variable 97 (cols 193 & 194)	100	1	1	1	12	0	12	24
Variable 98 (cols 195 & 196)	100	1	1	1	12	0	12	24
Variable 99 (cols 197 & 198)	100	1	1	1	12	0	12	24
Variable 100 (cols 199 & 200)	100	1	1	1	12	0	12	24
Variable 101 (cols 201 & 202)	100	1	1	1	12	0	12	24
Variable 102 (cols 203 & 204)	100	1	1	1	12	0	12	24
Variable 103 (cols 205 & 206)	100	1	1	1	12	0	12	24
Variable 104 (cols 207 & 208)	100	1	1	1	12	0	12	24
Variable 105 (cols 209 & 210)	100	1	1	1	12	0	12	24
Variable 106 (cols 211 & 212)	100	1	1	1	12	0	12	24
Variable 107 (cols 213 & 214)	100	1	1	1	12	0	12	24
Variable 108 (cols 215 & 216)	100	1	1	1	12	0	12	24
Variable 109 (cols 217 & 218)	100	1	1	1	12	0	12	24
Variable 110 (cols 219 & 220)	100	1	1	1	12	0	12	24
Variable 111 (cols 221 & 222)	100	1	1	1	12	0	12	24
Variable 112 (cols 223 & 224)	100	1	1	1	12	0	12	24
Variable 113 (cols 225 &	100	1	1	1	12	0	12	24

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
226)								
Variable 114 (cols 227 & 228)	100	1	1	1	12	0	12	24
Variable 115 (cols 229 & 230)	100	1	1	1	12	0	12	24
Variable 116 (cols 231 & 232)	83.33333	0.625	0.625	0.640625	10	2	12	24
Variable 117 (cols 233 & 234)	83.33333	0.625	0.625	0.640625	10	2	12	24
Variable 118 (cols 235 & 236)	100	1	1	1	12	0	12	24
Variable 119 (cols 237 & 238)	100	1	1	1	12	0	12	24
Variable 120 (cols 239 & 240)	91.66667	-0.04348	0	0	11	1	12	24
Variable 121 (cols 241 & 242)	58.33333	0.351351	0.361702	0.378378	7	5	12	24
Variable 122 (cols 243 & 244)	66.66667	0.529412	0.538462	0.54902	8	4	12	24
Variable 123 (cols 245 & 246)	100	1	1	1	12	0	12	24
Variable 124 (cols 247 & 248)	100	1	1	1	12	0	12	24
Variable 125 (cols 249 & 250)	100	1	1	1	12	0	12	24
Variable 126 (cols 251 & 252)	83.33333	0.652174	0.657143	0.666667	10	2	12	24
Variable 127 (cols 253 & 254)	91.66667	0.630769	0.636364	0.646154	11	1	12	24
Variable 128 (cols 255 & 256)	100	1	1	1	12	0	12	24
Variable 129 (cols 257 & 258)	91.66667	-0.04348	0	0	11	1	12	24
Variable 130 (cols 259 & 260)	100	1	1	1	12	0	12	24

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
Variable 131 (cols 261 & 262)	100	1	1	1	12	0	12	24
Variable 132 (cols 263 & 264)	100	1	1	1	12	0	12	24
Variable 133 (cols 265 & 266)	100	1	1	1	12	0	12	24
Variable 134 (cols 267 & 268)	100	1	1	1	12	0	12	24
Variable 135 (cols 269 & 270)	100	1	1	1	12	0	12	24
Variable 136 (cols 271 & 272)	91.66667	0.630769	0.636364	0.646154	11	1	12	24
Variable 137 (cols 273 & 274)	83.33333	0.272727	0.294118	0.30303	10	2	12	24
Variable 138 (cols 275 & 276)	91.66667	-0.04348	0	0	11	1	12	24
Variable 139 (cols 277 & 278)	100	1	1	1	12	0	12	24
Variable 140 (cols 279 & 280)	100	1	1	1	12	0	12	24
Variable 141 (cols 281 & 282)	100	1	1	1	12	0	12	24
Variable 142 (cols 283 & 284)	100	1	1	1	12	0	12	24
Variable 143 (cols 285 & 286)	100	1	1	1	12	0	12	24
Variable 144 (cols 287 & 288)	100	1	1	1	12	0	12	24
Variable 145 (cols 289 & 290)	91.66667	-0.04348	0	0	11	1	12	24
Variable 146 (cols 291 & 292)	91.66667	0.466667	0.478261	0.488889	11	1	12	24
Variable 147 (cols 293 & 294)	100	1	1	1	12	0	12	24
Variable 148 (cols 295 &	91.6666	0.46666	0.478261	0.488889	11	1	12	24

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
296)	7	7						
Variable 149 (cols 297 & 298)	91.66667	-0.04348	0	0	11	1	12	24
Variable 150 (cols 299 & 300)	91.66667	-0.04348	0	0	11	1	12	24
Variable 151 (cols 301 & 302)	100	1	1	1	12	0	12	24
Variable 152 (cols 303 & 304)	100	1	1	1	12	0	12	24
Variable 153 (cols 305 & 306)	91.66667	-0.04348	0	0	11	1	12	24
Variable 154 (cols 307 & 308)	100	1	1	1	12	0	12	24
Variable 155 (cols 309 & 310)	91.66667	0.885167	0.885714	0.889952	11	1	12	24
Variable 156 (cols 311 & 312)	100	1	1	1	12	0	12	24
Variable 157 (cols 313 & 314)	100	1	1	1	12	0	12	24
Variable 158 (cols 315 & 316)	100	1	1	1	12	0	12	24
Variable 159 (cols 317 & 318)	100	1	1	1	12	0	12	24
Variable 160 (cols 319 & 320)	100	1	1	1	12	0	12	24
Variable 161 (cols 321 & 322)	100	1	1	1	12	0	12	24
Variable 162 (cols 323 & 324)	91.66667	0.619048	0.625	0.634921	11	1	12	24
Variable 163 (cols 325 & 326)	100	1	1	1	12	0	12	24
Variable 164 (cols 327 & 328)	100	1	1	1	12	0	12	24
Variable 165 (cols 329 & 330)	100	1	1	1	12	0	12	24

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
Variable 166 (cols 331 & 332)	83.33333	0.538462	0.54717	0.557692	10	2	12	24
Variable 167 (cols 333 & 334)	58.33333	0.408867	0.428571	0.433498	7	5	12	24
Variable 168 (cols 335 & 336)	83.33333	0.44186	0.454545	0.465116	10	2	12	24
Variable 169 (cols 337 & 338)	100	1	1	1	12	0	12	24
Variable 170 (cols 339 & 340)	100	1	1	1	12	0	12	24
Variable 171 (cols 341 & 342)	100	1	1	1	12	0	12	24
Variable 172 (cols 343 & 344)	83.33333	0.44186	0.454545	0.465116	10	2	12	24
Variable 173 (cols 345 & 346)	83.33333	0.733333	0.733333	0.744444	10	2	12	24
Variable 174 (cols 347 & 348)	100	1	1	1	12	0	12	24
Variable 175 (cols 349 & 350)	100	1	1	1	12	0	12	24
Variable 176 (cols 351 & 352)	91.66667	-0.04348	0	0	11	1	12	24
Variable 177 (cols 353 & 354)	100	1	1	1	12	0	12	24
Variable 178 (cols 355 & 356)	100	1	1	1	12	0	12	24
Variable 179 (cols 357 & 358)	91.66667	0.619048	0.625	0.634921	11	1	12	24
Variable 180 (cols 359 & 360)	100	1	1	1	12	0	12	24
Variable 181 (cols 361 & 362)	100	1	1	1	12	0	12	24
Variable 182 (cols 363 & 364)	100	1	1	1	12	0	12	24
Variable 183 (cols 365 &	100	1	1	1	12	0	12	24

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
366)								
Variable 184 (cols 367 & 368)	100	1	1	1	12	0	12	24
Variable 185 (cols 369 & 370)	91.66667	-0.04348	0	0	11	1	12	24
Variable 186 (cols 371 & 372)	66.66667	0.531707	0.542857	0.55122	8	4	12	24
Variable 187 (cols 373 & 374)	83.33333	0.733333	0.733333	0.744444	10	2	12	24
Variable 188 (cols 375 & 376)	100	1	1	1	12	0	12	24
Variable 189 (cols 377 & 378)	100	1	1	1	12	0	12	24
Variable 190 (cols 379 & 380)	83.33333	0.733333	0.733333	0.744444	10	2	12	24
Variable 191 (cols 381 & 382)	91.66667	0.864407	0.865169	0.870056	11	1	12	24
Variable 192 (cols 383 & 384)	83.33333	0.724138	0.727273	0.735632	10	2	12	24
Variable 193 (cols 385 & 386)	91.66667	0.619048	0.625	0.634921	11	1	12	24
Variable 194 (cols 387 & 388)	100	1	1	1	12	0	12	24
Variable 195 (cols 389 & 390)	100	1	1	1	12	0	12	24
Variable 196 (cols 391 & 392)	100	1	1	1	12	0	12	24
Variable 197 (cols 393 & 394)	100	1	1	1	12	0	12	24
Variable 198 (cols 395 & 396)	100	1	1	1	12	0	12	24
Variable 199 (cols 397 & 398)	100	1	1	1	12	0	12	24
Variable 200 (cols 399 & 400)	100	1	1	1	12	0	12	24

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
Variable 201 (cols 401 & 402)	100	1	1	1	12	0	12	24
Variable 202 (cols 403 & 404)	100	1	1	1	12	0	12	24
Variable 203 (cols 405 & 406)	100	1	1	1	12	0	12	24
Variable 204 (cols 407 & 408)	100	1	1	1	12	0	12	24
Variable 205 (cols 409 & 410)	100	1	1	1	12	0	12	24
Variable 206 (cols 411 & 412)	91.66667	0.813953	0.815385	0.821705	11	1	12	24
Variable 207 (cols 413 & 414)	83.33333	0.272727	0.294118	0.30303	10	2	12	24
Variable 208 (cols 415 & 416)	100	1	1	1	12	0	12	24
Variable 209 (cols 417 & 418)	100	1	1	1	12	0	12	24
Variable 210 (cols 419 & 420)	100	1	1	1	12	0	12	24
Variable 211 (cols 421 & 422)	91.66667	-0.04348	0	0	11	1	12	24
Variable 212 (cols 423 & 424)	91.66667	-0.04348	0	0	11	1	12	24
Variable 213 (cols 425 & 426)	100	1	1	1	12	0	12	24
Variable 214 (cols 427 & 428)	100	1	1	1	12	0	12	24
Variable 215 (cols 429 & 430)	100	1	1	1	12	0	12	24
Variable 216 (cols 431 & 432)	100	1	1	1	12	0	12	24
Variable 217 (cols 433 & 434)	100	1	1	1	12	0	12	24
Variable 218 (cols 435 &	100	1	1	1	12	0	12	24

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
436)								
Variable 219 (cols 437 & 438)	100	1	1	1	12	0	12	24
Variable 220 (cols 439 & 440)	100	1	1	1	12	0	12	24
Variable 221 (cols 441 & 442)	100	1	1	1	12	0	12	24
Variable 222 (cols 443 & 444)	100	1	1	1	12	0	12	24
Variable 223 (cols 445 & 446)	100	1	1	1	12	0	12	24
Variable 224 (cols 447 & 448)	100	1	1	1	12	0	12	24
Variable 225 (cols 449 & 450)	100	1	1	1	12	0	12	24
Variable 226 (cols 451 & 452)	100	1	1	1	12	0	12	24
Variable 227 (cols 453 & 454)	100	1	1	1	12	0	12	24
Variable 228 (cols 455 & 456)	100	1	1	1	12	0	12	24
Variable 229 (cols 457 & 458)	100	1	1	1	12	0	12	24
Variable 230 (cols 459 & 460)	100	1	1	1	12	0	12	24
Variable 231 (cols 461 & 462)	100	1	1	1	12	0	12	24
Variable 232 (cols 463 & 464)	100	1	1	1	12	0	12	24
Variable 233 (cols 465 & 466)	100	1	1	1	12	0	12	24
Variable 234 (cols 467 & 468)	100	1	1	1	12	0	12	24
Variable 235 (cols 469 & 470)	100	1	1	1	12	0	12	24

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
Variable 236 (cols 471 & 472)	66.66667	0.6	0.603306	0.616667	8	4	12	24
Variable 237 (cols 473 & 474)	66.66667	0.563636	0.567568	0.581818	8	4	12	24
Variable 238 (cols 475 & 476)	75	0.362832	0.4	0.389381	9	3	12	24
Variable 239 (cols 477 & 478)	100	1	1	1	12	0	12	24
Variable 240 (cols 479 & 480)	100	1	1	1	12	0	12	24
Variable 241 (cols 481 & 482)	100	1	1	1	12	0	12	24
Variable 242 (cols 483 & 484)	91.66667	-0.04348	0	0	11	1	12	24
Variable 243 (cols 485 & 486)	100	1	1	1	12	0	12	24
Variable 244 (cols 487 & 488)	100	1	1	1	12	0	12	24
Variable 245 (cols 489 & 490)	100	1	1	1	12	0	12	24
Variable 246 (cols 491 & 492)	66.66667	0.604938	0.609756	0.621399	8	4	12	24
Variable 247 (cols 493 & 494)	100	1	1	1	12	0	12	24
Variable 248 (cols 495 & 496)	83.33333	0.4	0.428571	0.425	10	2	12	24
Variable 249 (cols 497 & 498)	91.66667	-0.04348	0	0	11	1	12	24
Variable 250 (cols 499 & 500)	91.66667	0.904382	0.904762	0.908367	11	1	12	24
Variable 251 (cols 501 & 502)	100	1	1	1	12	0	12	24
Variable 252 (cols 503 & 504)	100	1	1	1	12	0	12	24
Variable 253 (cols 505 &	100	1	1	1	12	0	12	24

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
506)								
Variable 254 (cols 507 & 508)	100	1	1	1	12	0	12	24
Variable 255 (cols 509 & 510)	100	1	1	1	12	0	12	24
Variable 256 (cols 511 & 512)	100	1	1	1	12	0	12	24
Variable 257 (cols 513 & 514)	100	1	1	1	12	0	12	24
Variable 258 (cols 515 & 516)	100	1	1	1	12	0	12	24
Variable 259 (cols 517 & 518)	100	1	1	1	12	0	12	24
Variable 260 (cols 519 & 520)	91.66667	-0.04348	0	0	11	1	12	24
Variable 261 (cols 521 & 522)	100	1	1	1	12	0	12	24
Variable 262 (cols 523 & 524)	100	1	1	1	12	0	12	24
Variable 263 (cols 525 & 526)	100	1	1	1	12	0	12	24
Variable 264 (cols 527 & 528)	100	1	1	1	12	0	12	24
Variable 265 (cols 529 & 530)	100	1	1	1	12	0	12	24
Variable 266 (cols 531 & 532)	100	1	1	1	12	0	12	24
Variable 267 (cols 533 & 534)	91.66667	-0.04348	0	0	11	1	12	24
Variable 268 (cols 535 & 536)	100	1	1	1	12	0	12	24
Variable 269 (cols 537 & 538)	100	1	1	1	12	0	12	24
Variable 270 (cols 539 & 540)	100	1	1	1	12	0	12	24

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
Variable 271 (cols 541 & 542)	91.66667	-0.04348	0	0	11	1	12	24
Variable 272 (cols 543 & 544)	91.66667	-0.04348	0	0	11	1	12	24
Variable 273 (cols 545 & 546)	100	1	1	1	12	0	12	24
Variable 274 (cols 547 & 548)	100	1	1	1	12	0	12	24
Variable 275 (cols 549 & 550)	100	1	1	1	12	0	12	24
Variable 276 (cols 551 & 552)	91.66667	0.798319	0.8	0.806723	11	1	12	24
Variable 277 (cols 553 & 554)	83.33333	0.684211	0.688312	0.697368	10	2	12	24
Variable 278 (cols 555 & 556)	91.66667	0.466667	0.478261	0.488889	11	1	12	24
Variable 279 (cols 557 & 558)	91.66667	0.717647	0.72093	0.729412	11	1	12	24
Variable 280 (cols 559 & 560)	100	1	1	1	12	0	12	24
Variable 281 (cols 561 & 562)	100	1	1	1	12	0	12	24
Variable 282 (cols 563 & 564)	100	1	1	1	12	0	12	24
Variable 283 (cols 565 & 566)	100	1	1	1	12	0	12	24
Variable 284 (cols 567 & 568)	100	1	1	1	12	0	12	24
Variable 285 (cols 569 & 570)	100	1	1	1	12	0	12	24
Variable 286 (cols 571 & 572)	83.33333	0.639098	0.641791	0.654135	10	2	12	24
Variable 287 (cols 573 & 574)	75	0.568862	0.571429	0.586826	9	3	12	24
Variable 288 (cols 575 &	91.6666	-	0	0	11	1	12	24

	Percent Agreement	Scott's Pi	Cohen's Kappa	Krippendorff's Alpha	N Agreements	N Disagreements	N Cases	N Decisions
576)	7	0.04348						
Variable 289 (cols 577 & 578)	100	1	1	1	12	0	12	24
Variable 290 (cols 579 & 580)	100	1	1	1	12	0	12	24
Variable 291 (cols 581 & 582)	66.66667	0.54067	0.542857	0.559809	8	4	12	24
Variable 292 (cols 583 & 584)	91.66667	0.889401	0.889908	0.894009	11	1	12	24
Variable 293 (cols 585 & 586)	100	1	1	1	12	0	12	24
Variable 294 (cols 587 & 588)	91.66667	0.747368	0.75	0.757895	11	1	12	24
Variable 295 (cols 589 & 590)	91.66667	0.747368	0.75	0.757895	11	1	12	24
* * *			Krippendorf's Alpha	0.851383				

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