The development of an integrated financial decision-making model using lean accounting

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To: My wife Michele,
my son Juan-Jack,
and my daughter Shané

In memory of Albertus Jacobus Swanepoel 1943–1986

It was my Dad who installed in me the love of numbers. He introduced me to the idea that there are always a better way of doing things. From a very young age he thought me to persevere and never give up. Although I was very young when he passed away, these influences inspired my life journey. Through his words of wisdom and his actions he had inspired me, giving me the courage to follow my dreams.

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God my Father said to me; Jeremiah 1:5 *"Before I formed you in the womb I knew [and] approved of you [as My chosen instrument], and before you were born I separated and set you apart, consecrating you; [and] I appointed you as a prophet to the nations"* (Bible, 1987).

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Many times I felt that there are no deliverance then the Holy Ghost came to give me the comfort and guidance as is promised in Johannes 14:26 *"But the Comforter (Counsellor, Helper, Intercessor, Advocate, Strengthener, Standby), the Holy Spirit, Whom the Father will send in My name [in My place, to represent Me and act on My behalf], He will teach you all things. And He will cause you to recall (will remind you of, bring to your remembrance) everything I have told you"* (Bible, 1987). I therefor first give thanks to my Lord.

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ABSTRACT

Title: The development of an integrated financial decision-making model using lean accounting

Key terms: Usefulness and quality of accounting information, decision-making, decision-usefulness objective, integrated reporting, lean accounting, continuous improvement

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The importance of accounting information in the decision-making of stakeholders has been studied extensively since the early 1900s. Significant change in the business and accounting landscape over the past 30 years happened because of globalisation and reporting of various accounting standards. This led to the expansion of research efforts on financial accounting disclosure, integrated reporting, financial decision-making models, and lean accounting. However, despite these vigorous research efforts this study identified a gap in the literature that little to none of these research are being integrated or supply proposal to practical applications on possible integration.

It was noted from the literature review that the development and applications of accounting standards are being influenced by various internal and external factors. These influences are also evident in the use of financial decision-making models available to stakeholders. Further the study revealed that traditional accounting has many shortcomings and that lean accounting has the ability to improve decision-making. Based on these findings the study attempt to provide a framework for the development of an integrated financial decision-making model and developing an integrated financial decision-making model using lean accounting principles.

The newly developed integrated financial decision-making model using lean accounting principles make use of a hybrid of grounded theory and multiple case study. The thesis employed the Struassian grounded theory, whereby historical evidence, experience and existing theories were used to generate novel theory. While the use of a multiple case study enhance this developed novel theory. The fusion of grounded theory and multiple case study methods proved to be an ideal methodology as there were no previous

studies identified which integrate financial decision-making models and lean accounting principles.

The data that were necessary for the thesis were obtained using document analysis. The document analysis relied on the annual reports of three selected energy companies on three different stock exchanges. Using the document analysis enhances the authenticity, reliability and credibility of the data.

The newly developed integrated financial decision-making model using lean accounting principles require the adoption of the following concepts:

- Value stream performance measurements
- Value stream box reports
- Value stream performance reports

The findings indicated that financial decision-making models are being influenced by the adoption of lean accounting principles. Finally, by evaluating the newly developed model, it was confirmed that the integrated financial decision-making model using lean accounting principles influences the decision-making abilities of stakeholders. This thesis provides accounting professions and academics around the world with a newly developed and empirical tested financial decision-making model using lean accounting that can be applied by all stakeholders using any accounting standard to influence decision-making.

OPSOMMING

Titel: Die ontwikkeling van 'n geïntegreerde finansiële besluitnemingsmodel deur gebruik te maak van lenige rekeningkunde.

Sleutelterme: Nuttigheid en kwaliteit van rekeningkundige inligting, besluitneming, besluitnemingsdoeltreffendheidsdoelwit, geïntegreerde verslaglewering, lenige rekeningkunde, deurlopende verbetering

---

Die belangrikheid van rekeningkundige inligting in die besluitneming van belanghebbendes is sedert die vroeë 1900's deeglik bestudeer. Beduidende verandering in die besigheids- en rekeningkundige landskap oor die afgelope 30 jaar het as gevolg van globalisering en verslagdoening van verskeie rekeningkundige standaarde plaasgevind. Dit het gelei tot die uitbreiding van navorsingspogings oor finansiële verslaglewering openbaarmaking, geïntegreerde verslaglewering, finansiële besluitnemingsmodelle en lenige rekeningkunde. Ten spyte van hierdie toenemend navorsingspogings het hierdie proefskrif egter 'n gaping in die literatuur geïdentifiseer dat min of geen van hierdie navosing geïntegreer word of voorstelle vir praktiese toepassings oor moontlike integrasie gelewer word nie.

Uit die literatuuroorsig is daar opgemerk dat die ontwikkeling en toepassing van rekeningkundige standaarde beïnvloed word deur verskeie interne en eksterne faktore. Hierdie invloede is ook duidelik in die gebruik van finansiële besluitnemingsmodelle wat vir belanghebbendes beskikbaar is. Verder het die studie aan die lig gebring dat tradisionele rekeningkunde baie tekortkominge het en dat lenige rekeningkunde die vermoë het om besluitneming te verbeter. Gebaseer op hierdie bevindinge poog die studie om 'n raamwerk vir die ontwikkeling van 'n geïntegreerde finansiële besluitnemingsmodel te voorsien, sowel as die ontwikkeling van 'n geïntegreerde finansiële besluitnemingsmodel deur gebruik te maak van lenige rekeningkundige beginsels.

Die nuut ontwikkelde geïntegreerde finansiële besluitnemingsmodel wat lenige rekeningkundige beginsels gebruik, maak gebruik van 'n kruising van gegronde teorie

en meervoudige gevallestudie. Die proefskrif het die Struassian-gegronde teorie gebruik, waardeur historiese bewyse, ervarings en bestaande teorieë gebruik word om nuwe teorie te genereer. Terwyl die gebruik van meervoudige gevallestudie hierdie ontwikkelde teorie verbeter. Die samesmelting van gegronde teorie en meervoudige gevallestudie-metodes blyk om 'n ideale metodologie te wees, aangesien daar geen vorige studies geïdentifiseer is wat finansiële besluitnemingsmodelle en lenige rekeningkundige beginsels integreer nie.

Die data wat nodig was vir die proefskrif, is verkry deur gebruik te maak van dokument analise. Die dokument analise was gebaseer op die jaarverslae van drie geselekteerde energiemaatskappye op drie verskillende aandelebeurse. Die gebruik van die dokument analise verhoog die egtheid, betroubaarheid en geloofwaardigheid van die data.

Die nuut ontwikkelde geïntegreerde finansiële besluitnemingsmodel wat gebruik maak van lenige rekeningkundige beginsels vereis die aanneming van die volgende begrippe:

- Waarde-stroomprestasiemetings
- Waarde-stroomverslae
- Waarde-stroomprestasieverslae

Die bevindinge het aangedui dat finansiële besluitnemingsmodelle beïnvloed word deur die aanvaarding van lenige rekeningkundige beginsels. Ten slotte met die evaluering van die nuutgevormde model, is bevestig dat die geïntegreerde finansiële besluitnemingsmodel wat lenige rekeningkundige beginsels gebruik, die besluitnemingsvermoë van belanghebbendes verhoog. Hierdie proefskrif bied rekeningkundige professies en akademici regoor die wêreld met 'n nuut ontwikkelde en empiriese getoetsde finansiële besluitnemingsmodel deur gebruik te maak van leninge rekeningkunde wat deur alle belanghebbendes toegepas kan word deur enige rekeningkundige standaard te gebruik om besluitneming te verbeter.

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LIST OF ABBREVIATIONS, SYMBOLS AND ACRONYMS

AFP	:	Traditional accounting-based financial performance measures
AHP	:	Analytical hierarchy process
BSC	:	Balance scorecard
CFROI	:	Cash flow return on investment
CGR	:	Critical growth rate
CS	:	Capital sensitivity
CPP	:	Creditors payment period
CR	:	Current ratio
CVA	:	Cash value added
D/E	:	Debt/Equity ratio
DCP	:	Debtors' collection period
ED	:	Economic depreciation
EE	:	Employment equity
EPS	:	Earnings per share
ETSI	:	Equity to total shareholders' interest
EVA	:	Economic value added
FCC	:	Fixed charged covered
FRTG	:	Funds required to finance growth
GAAP	:	Generally accepted accounting principles
GFC	:	Global financial crises (gfc),
GP%	:	Gross profit percentage
IAS	:	International accounting standards
IASB	:	International accounting standards board
IASC	:	International accounting standards committee
IC	:	Interest cover
IFAC	:	International Federation of Accountants
IFRS	:	International financial reporting standards
IS	:	Income sensitivity
IT	:	Inventory turnover
JIT	:	Just-in–time
JSE	:	Johannesburg stock exchange
LQ	:	Liquidity

LSE	:	London stock exchange
LSS	:	Lean six sigma
MVA	:	Market value added
NDP	:	National development plan
NF	:	Non-financial indicators
NIWC	:	Net investment in working capital
NP%	:	Net profit percentage
NPBT%	:	Net profit before tax percentage
NYSE	:	New york stock exchange
ODC	:	Ordinary dividends cover
PEA	:	Performance evaluation areas
P/E	:	Price earnings ratio
PESTEL	:	Political, economic, social, technological, environmental and legal
PDC	:	Preference dividends cover
PPT	:	Principles, practices, and tools of lean accounting
QR	:	Quick ratio
ROA	:	Return on assets ratio
ROE	:	Return on equity ratio
SAICA	:	South African Institute of Charted Accountants
SHI	:	Shareholders' interest
SO	:	Solvability
SOX	:	Sarbanes-oxley
TATL	:	Total assets to total liabilities
TPM	:	Total productive maintenance
TPR	:	Traditional performance report
TQM	:	Total quality management
TSITA	:	Total shareholders' interest to total assets
UK GAAP	:	Generally accepted accounting principles (united kingdom)
US GAAP	:	Generally accepted accounting principles (united states)
VFP	:	Modern value-based financial performance measures
VM	:	Visual management
VSM	:	Value stream management
VSMap	:	Value stream mapping

VSPR : Value stream performance report

ZAMM : Zen and the Art of Motorcycle Maintenance

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REMARKS TO THE READER

The reader should take note of the following:

The literature review performed in this thesis is based on an overabundance of sources ranging from the 1919s to 2017. This was done to not only make sure that the most germane research findings were taken into account, but also to point towards the lushness of research previously performed and the developments over many decades in this field.

The references were listed according to the **Harvard style** as set out in the 2012 version of the North-West University referencing guide.

In cases of Internet sources or where an entire source is being referred to, no page number will appear in the in-text reference, which is in accordance with the above-mentioned reference guide.

This thesis is presented in the **thesis format** according to the policies of the North-West University.

The following **article was submitted** for publication to the below-mentioned, IBSS-indexed and internationally peer-reviewed academic journal as follows:

> Swanepoel, M.J. & Lucouw, P. 2017. The influence of applying lean accounting principles to financial decision-making models. Journal of Economic and Financial Sciences, Unpublished. (ISSN 1995-7076 (print) and ISSN 2312-2803 (online)).
>
> The submitted article was set out in line with the journals' submission guidelines.
>
> Confirmation of the submission is included in **Annexure C** on page 331.

The articles was written by the first author as the PhD candidate (Swanepoel, M.J.). The second author (Lucouw, P.), the promoter of this PhD thesis, reviewed the article subsequent to its completion. The first author, as the PhD candidate, therefore contributed **more than 50%** to the article, as required by the North-West University.

CHAPTER 1

INTRODUCTION AND BACKGROUND OF THE STUDY

"The price of doing the same old thing is far higher than the price of change." *- Bill Clinton*

1.1 Background to the study

Quality integrated financial reports, dealing with financial and non-financial issues are important, as accounting information is the foundation of almost all decisions company stakeholders need to take (Aparaschivei, 2007:5). During times of financial hardship and crises the need for quality integrated financial reports that aid decision-making (Jonker & Maroun, 2013:22) could be the only lifeline of a struggling company. Integrated financial reports which influence decision-making will therefore create and sustain value for both the accounting profession and users in the; short-, medium- and long-term. The past 30 years saw many changes in accountancy (Busco & Scapens, 2011:322; Chiarini, 2012:681; Arlbjorn & Freytag, 2013:174) and much turmoil in the global economy (Bengtsson, 2011:572). Most significant changes have been implemented after the uncovering of accounting scandals (UNECE, 2002; SEC, 2004; ICAEW, 2005; Low, Davey & Hooper, 2008:223).

The Enron, Global Crossing, and WorldCom accounting reporting scandals led to many developments and improvements in accountancy within the Public Company Accounting Oversight Board (PCAOB). Some of the evidence are found in the Development's principles of corporate governance (OECD, 2004); the German Corporate Governance Code (GCGCGC, 2006), and passing the Sarbanes-Oxley (SOX) Act of 2002 in the United States of America (USA). The passing of the SOX act revolutionise accounting and auditing, reporting standards and practices (Bell, Peecher, & Solomon, 2005:352-381; Grant & Visconti, 2006:364; Moloi, 2009:36). Accounting bodies all around the world, implemented and managed the various new accounting, auditing and ethical standards that International Federation of Accountants (IFAC) introduced.

South Africa has also been influenced by these global accounting tendencies and the South African Institute of Charted Accountants (SAICA) accepted International Federation of Accountants's (IFAC) new standards (IFRS, 2014a and IFRS, 2014b). The convergence to these international accounting standards in South Africa influenced

the King III report's development of corporate governance and the new companies act that were promulgated in 2008. Section 28(1) of the Companies Act, 2008 requires a company to maintain a set of accurate and complete accounting records; while listed companies must also comply with the King III prescription as part of the JSE-listing requirements. With governance compliance as basis, the board of directors accept that; strategy, risk, performance and sustainability are inseparable and must comply with applicable laws, rules, codes and standards as part of the company's integrated financial reporting.

Integrated financial reporting includes both financial and non-financial statements. The Independent Regulatory Body for Auditors (IRBA, 2011) defines "*financial statements as a structured representation of historical financial information, including notes, intended to communicate an entity's economic resources or obligations at a point in time in accordance with a financial reporting framework"*. The related notes in general compromise a summary of significant accounting policies and other explanatory information. The term financial statements generally refers to a complete set of financial statements as determined by the requirements of the applicable financial reporting framework, but can also refer to a single financial statement. Traditionally financial reporting models are retrospective and rely on historic financial- and operational information (Pindyck & Rubinfeld, 2013:230). However, Carels, Maroun and Padia (2014:992) argue that a string of corporate scandals, environmental disasters, and persistent socio-economic problems, confirms that traditional financial reporting and decision-making models are flawed.

Flaws in traditional financial accounting reporting and decision-making models relate to retrospective view of, unreasonable cost allocation policies, mismatching between accounting policies and actual events, improper classification and valuation of inventories and the inability to provide appropriate customer value-related reports (Hyer & Wemmerlöv, 2002:547, Ruiz de Arbulo-López & Fortuny-Santos, 2010:576). Pindyck and Rubinfeld (2013:230) argue that accountants focus on a historical view while economist, are forward-looking in the allocation scares resources. Accounting cost is calculated using actual cost plus depreciation charges while economic cost comprise the cost of utilising economic resources in the production process. Pindyck and Rubinfeld's (2013:230) argument, highlight the problem related to the retrospective view

of financial reporting, an argument that seems to be multi-disciplinary (Schoonraad, Grobler & Gouws*,* 2005:273).

Schoonraad *et al.* (2005:273) propose that financial communication is only useful to all stakeholders if the design thereof consider financial as well as non-financial users. The complexity of reports, provided by traditional financial accounting reporting and decision-making models proved to be a challenge. The challenge emulate from arguments that not all users of financial information are financial scholars. Stakeholders need these reports to make optimal decisions, the stewardship objective (Gouws, 1997:66). Hopper's (1980:401) seminal research distinguishes between accounting roles that typically focus firstly on compliance reporting and control-type issues respectively and secondly on problem solving, centring on providing relevant information for decision-making. This problem-solving role of accounting typically represents the image of a business partner (Friedman & Lyne, 2001:437; Vaivio, 2006:195; Vaivio & Kokko, 2006:49). The perception is that accounting must be harmonised and converged, making it more useful and widely acceptable to users in different markets and nationalities (Qiong & Jianjun, 2012:918). The value of accounting depends the on usefulness, quality and influences on stakeholders' decision-making ability.

There are many studies on how usefulness (Staubus, 2000:159-160; Gassen & Schwedler, 2010:496; Jaffar, Selamat, Ismail & Hamzah*,* 2012:1407-1408; Williams & Ravenscroff, 2014:780-783) and quality (Jonas & Blancet, 2000:353-354) of accounting information influence decision-making. Gouws and Lucouw (1999:101) argue that the decision-usefulness objective of accounting has received much more attention in accounting research. Developing integrated financial reports that are useful for decision-making to all stakeholders (Petty & Glithrie, 2000:168; Montesinos, Brusca, Rossi & Aversano, 2013:172-176) will provide; relevant, trustworthy and timeous information (Schaltegger & Burrit, 2010:377; Velte, 2014:2; Stent & Dowler, 2015:103) and actively contribute to the sustainability of the global business community (Tilt, 2001:198). In South Africa the National Development Plan (NDP) aims to eliminate poverty and reduce inequality by 2030 (South African Government, 2013). This objective will place additional pressure on the accounting profession in South African and its ability to effectively communicate how companies create and sustain value in the short-, medium- and long-term (Son, Marriott & Marriott 2006:230; Joseph, 2007:55).

Furthermore, developing integrated financial information reporting models is useful and relevant for both financial and non-financial users (Reck, 2001:66) for decision-making purposes. The seminal research of Womack and Jones (1996) are supported by Lander and Liker (2007:3690&3694); Salam (2012:11); and Ofileanu and Topor (2014:344) that argue that some of the shortcomings of traditional accounting have been overcome using lean accounting principles. Lean accounting provides financial information, which is accurate, timeous and understandable for financial as well as non-financial users (de Arbulo-López & Fortuny-Santos, 2010:581). The use of lean accounting would lead to an increase in customer value, profitability, and cash flow, thereby ensuring sustainable growth. However it must be noted that making use of lean accounting tools in order to eliminate waste, reports must fully comply with accounting standards.. Maskell and Kennedy (2007:59-73) explain that if companies chose lean accounting, an important requirement is the substantial change in accounting, control and measurement methods which creates implementation challenges.

Sawani (2013:1) explains that the implementation of challenges are influenced by social and cultural values; political and legal systems; business activities and economic conditions; standard-setting processes; capital markets and forms of ownership; and cooperative efforts. South Africa is not spared from these challenges as Slabbert (2013:4) argues that political forces are destabilising labour relations. Willemse (2013:10) demonstrates that in some circumstances, South Africa is highly competitive when compared to other countries, but red lights are bright when it comes to labour. The literature review, revealed a large number of research papers on accounting standards, their implementation and influences on countries and the business landscape.

Qiong and Jianjun (2012:918) support Weetman (2001:104-105); Chee Chiu Kwok and Sharp (2005:75); Wagenhofer (2009:73); and Laughlin (2012:46) who all found that the implementation of international accounting standards are one of the critical issues in accounting research. Integrated reporting, corporate governance, financial decision-making models and lean accounting and have been extensively researched. It further revealed a large number of research papers suggesting that financial decision-making is influenced by the usefulness and the quality of accounting information.

The study developed an integrated financial decision-making model combining lean accounting principles, integrated reporting and decision usefulness. While rigorously

maintaining adherence to international accounting practices, reporting requirements and regulations. By combining these principles, the study is given uniqueness with a South African flavour. This South African flavour can be called “South-Africanising”. South-Africanising can be explained in terms of the FIFA 2010 Soccer World cup, where soccer got a South African flavour with the unique sounds of the Vuvuzela. However as, South African companies and accountants operate within a global economy and adhere to international accounting standards, this study also contributes to the international accounting research and could give insight into the gap between corporate reporting and the integrated reporting framework that Stent and Dowler (2015:92) identified.

1.2 Problem statement

The problem exists that although there is extensive research on financial accounting disclosure, integrated reporting, financial decision-making models and lean accounting, these essential elements are not being integrated in current research efforts. This creates a gap between the literature and the practical application of financial accounting disclosure, integrated reporting, financial decision-making models and lean accounting. Kennedy and Widener (2008:320) conclude that a further study in lean accounting and financial accounting practices should be done to assess the impact on decision-making. Stent and Dowler (2015:14) critique current financial accounting disclosure models as it only provide basic level-, (event level) information on which future decisions must be made. The integration of financial accounting disclosure, integrated reporting, financial decision-making models and lean accounting will influence disclosure, integration, reliability and relevance of information for decision-making. Effectively communicating financial information with stakeholders concerning; resource allocation, performance assessment and risk determination will influence decision-making. The question can be posed whether an integrated financial decision-making model using lean accounting principles can be developed to assist stakeholders to make financial decisions. Folowing from this main research question, the following secondary question can be asked: Does an integrated financial decision-making model using lean accounting principles lead to more conservative results?

1.3 Purpose of the study

The purpose of this study is to develop an integrated financial decision-making model based on lean accounting principles that will lead to more conservative results that influence the decision-making of all stakeholders.

1.4 Research objectives

It is proposed that an in-depth study be done on compliance with international and convergence accounting standards, integrated reporting, and financial decision-making models along with using lean accounting principles and suitability to listed companies using different accounting standards. The following objectives have been formulated for the study:

1.4.1 Primary objectives

The primary objective was to develop an integrated financial decision-making model using lean accounting principles that will lead to more conservative results that will influence the decision-making of all the company's stakeholders.

1.4.2 Secondary objectives

In order to achieve the primary objective, the following supportive secondary objectives for the study were formulated and are listed below:

i. Analysing the development and application of accounting standards in order to make accounting reporting more useful and widely acceptable to users in different financial markets and nationalities.
ii. Review how accounting measurements, estimations, and outcomes of accounting (financial reports) relates to quality.
iii. Establish the relationship between accounting standards, cultural-, value models, and politics.
iv. Determine the purpose of decision-making and information requirements of different stakeholders.
v. Investigate different financial decision-making models used by the different stakeholders.
vi. Establish the influence that the adoption of lean accounting principles has on financial decision-making models.

vii. Establish the framework for the development of an integrated financial decision-making model using lean accounting principles.

viii. Evaluate the influence of the newly developed model on stakeholders' decision-making.

1.5 Scope of the study

The background to the study (Section 1.1, page 1) deduces that accounting's value is its ability to influence stakeholders' decision-making. Financial and non-financial information are part of the stakeholder's decision-making endeavour. This study focusses on improving the decision-usefulness objective of accounting, by developing an integrated financial decision-making model using lean accounting principles.

The multiple case study focusses on three companies using diverse accounting standards in order to determine whether the integrated financial decision-making model is suitable across different countries. The findings of this study should provide a valuable contribution to the international accounting profession.

1.6 Research design and methodology

The study made use of a hybrid methodology that combines grounded theory and multiple case study to achieve the secondary and primary research objectives (Section 1.4, page 6). In order to achieve these objectives a literature study was conducted that leads to the analysis of data and theory generation, making use of grounded theory and multiple case study. Kirk and Van Staden (2001:175) explain that grounded theory research has implications for both the understanding and the facilitation of change.

Glaser (1994:4) concludes that grounded theory goes *"beyond conjecture and preconception to the underlying processes of 'what's going on' in substantive area*s". Furthermore, Kirk and Van Staden (2001:175) outline its uniqueness to the task of discovering basic social processes that involve change while arguing its usefulness in health, management and business disciplines, all notable as environments that change while placing importance and relevance on dependent variables. Welman and Kruger (1999:190) explain that case studies are conducted to understand the peculiarity of a prodigy. Both multiple case study and grounded theory are designed to investigate a phenomenon (Knipper, 2010:14). Eisenhardt, Graebner and Sonenshein (2016:1114)

assert that the combinination of grounded theory and case study research prove to be successful in deductive as well as inductive research.

Because there exist no conceptual integrated financial decision-making model using lean accounting principles, nor are there proof whereby the literature suggests that the variables could be empirically tested, this study is primarily exploratory. The exclusive use of either grounded theory methodology or case study research is not befitting to the study. The essential characteristics of both these methodologies are necessary for theory development and describe the motives of the integrated financial decision-making model using lean accounting principles.

Since grounded theory methodology allows the researcher to start with an area of study and not with a theory, the theory can be developed. The literature does not have an integrated financial decision-making model using lean accounting principles, as was previously mentioned. This is no problem if grounded theory methodology is used as theory can emerge and developed further as the research project advance. Case study research develops theory (Rule & John, 2011:8). The lack of theory on an integrated financial decision-making model using lean accounting principles makes grounded theory ideal for this study while the case study method identifies the sample and provides the emerging theory from the collected data, while multiple case study explains the variance of the findings (Eisenhardt *et al*., 2016:1114). Both grounded theory and multiple case study's main principles were used in order to build theory during the study. This methodology was successfully used in a study by Knipper (2010). The overall design and methodology are discussed in the next section.

1.6.1 Literature study

An extensive literature review to gain theoretical sensitivity and to examine the degree to which the emergent theory fits reality was conducted. Literature sources include; relevant textbooks, peer-reviewed journal articles, newspaper articles and the Internet (Google scholar and EBSCOhost). The preliminary literature review indicated that there is ample prior research, however, the research indicated that only research on individual or standalone constructs were done and none of the research efforts considered an integrated approach of using all the constructs in an integrated financial decision-making model.

1.6.2 Empirical study

The empirical part of the study uses a mixed method of qualitative and quantitative methods. Data and theory are analysed, making use of document analysis, grounded theory and multiple case study to develop an integrated financial decision-making model. The qualitative analysis makes use of secondary data namely integrated reports, financial decision-making models and lean accounting principles that were obtained in annual financial reports, integrated reports and annual reports using targeted companies' web sites and other reliable internet sources, to determine the important elements of accounting disclosure.

The empirical part has generated an integrated financial decision-making model using lean accounting principles. Leedy and Ormrod (2010:35) supported by Mouton (2013:176) propose that models attempt to explain phenomena through what was previously discovered. Starting this process with open coding to determine the emerging categories (Boadu & Sorour, 2015:150) followed by highlighting the relationships between the emerging categories (Strauss & Corbin, 2008: 48) using a paradigm model (Delport, De Vos, Fouché & Strydom, 2013:412). The researcher then integrated, interpreted and refined the model to describe the phenomenon as demonstrated by Howell (2000:184) supported by Boadu and Sorour (2015:153). Mentz (2014:159) discusses how the researcher goes back and forth in order to successfully develop the emerging model. By explaining the importance of the phenomenon the researcher made use of case study research as proposed by Siggelkow (2007:23) that supports Eisenhardt and Graebner's (2007:26) argument to build theory.

The results of the fusion of grounded theory and multiple case study methodology developed an integrated financial decision-making model using lean accounting principles that would lead to more conservative results that will influence the financial decision-making of all stakeholders. The empirical part of this study comprises the following methodological dimensions.

1.6.2.1 Target population

The study intends to develop an integrated financial decision-making model using lean accounting principles, it is therefore necessary to consider the influence of different accounting standards on it. All listed companies on three stock exchanges namely; Johannesburg Stock Exchange (JSE), New York Stock Exchange (NYSE) and London

Stock Exchange (LSE) were identified as the target population. By selecting all listed companies from these three stock exchanges the researcher considered the accessibility, reliability and public availability of information regarding these companies.

1.6.2.2 Sampling frame

Section 1.6.2 (page 9) suggests that data were obtained from secondary sources. The sample needs to comprise companies that operate in a similar industry reporting under different accounting standards namely; 1] International Financial Reporting Standard (IFRS), 2] United Kingdom General Accepted Accounting Principles (UK GAAP), and 3] United States General Accepted Accounting Principles (US GAAP).

1.6.2.3 Sample method

The selection of the sample is limited to the sample frame (Section 1.6.2.2, page 10) and therefore the study made use non-probability convenience sampling. The sample was selected based on accessibility and availability of data as argued by Greener (2011:65), Farrokhi and Mahmoudi-Hamidabad (2012:2) and Laerd (2015).

1.6.2.4 Sample size

The selection is based on a purposeful and convenience, and were therefore limited by availability. The grounded theory and multiple case study sample consists of three companies which were selected due to the similarity of the industry in which they operate, although the accounting policies differ. The sample of the study consisted of; BP p.l.c., Chevron Corporation and Sasol Limited.

1.6.2.5 Measuring instrument and data-collection method

In order to analyse the data and theory the study made use of; theoretical sensitivity, document analysis, grounded theory and a multiple case study to propose an integrated financial decision-making model. In order to understand the data collection and analysis method of this study it necessary to emphasise theoretical sensitivity. Parker and Roffey (1997:226) explain theoretical sensitivity requires selection and an understanding of the data upon which the theory are being built. It requires the researcher to interact continuously with the data collection and analysis, rather than hypothesising a predetermined outcome and suspending judgement until all the data have been analysed.

Theoretical sensitivity is enhanced with techniques such as questioning, coding, theoretical memo writing, theoretical sampling, reviewing of literature, challenging of assumptions and existing theory together making constant comparisons (Strauss & Corbin, 1990:273; Lye, Perera & Rahman, 1997:792; Hoque, 2006:136-138). Ryan, Scapens and Theobold (2002: 28) argue that any model's credibility lies in its ability to commensurate with known empirical facts, it is therefore necessary that the study concludes evidence of enhancing the decision usefulness of all the company's stakeholders. The key to this would be evaluating the results of the research.

1.6.3 Evaluating the research

In striving to achieve the primary objective of the study (Section 1.4.1, page 6), an integrated financial decision-making model was developed, which include lean accounting principles, using a hybrid of grounded theory and multiple case study methods. The integrated financial decision-making model using lean accounting principles was then applied to the three companies' financial and non-financial information, in an attempt to determine the influence on the financial decision-making of all the stakeholders. By evaluating whether or not the research has successfully yielded the intended results as Babbie (2010: 363) argued, a structured appraisal (Mouton 2013:158) of the model is necessary. Babbie (2010:366) supported by Mouton (2013:158) demonstrates that the planned outcomes can be evaluated with reference to an analysis of existing published documents such as annual reports.

The captured data were analysed by means of Microsoft Excel 2010. Siggelkow (2007:20) differentiates case study research from other forms of research in the fact that it does not need to mention the recourse statement of "*results are significant a, p < 0,05*". Case study research has to motivate, inspire and illustrate its value to other researchers.

Making use of a case study requires from the researcher to develop the conceptual argument to motivate the importance of the phenomenon and the existence of limited theoretical knowledge about it (Siggelkow, 2007:21). Eisenhardt *et al*. (2016:1113-1114) demonstrate that by combining grounded theory with multiple case study methods, new theory emerges from data that are inspiring and cause deductive as well as inductive research to be done, while Siggelkow (2007:22) proposes the use of a case study is to illustrate the new theory.

1.7 Ethical considerations

Discovered information in this study is from the public domain and is deemed to be public knowledge for all stakeholders. The following are addressed under the ethical considerations of this study while developing an ethical framework:

i. The study complies with the minimum ethical standards pertaining to academic research.
ii. Data gathered of companies are treated as confidential, and will not be disclosed individually, but rather in aggregate or by means of a summary to the study.

1.8 Contributions of the study

The study will contribute to the literature of integrated financial decision-making, by combining accounting disclosure, integrated reports, financial decision-making models and lean accounting principles. Developing an integrated financial decision-making model will enhance literature that considers international accounting standards, integrated reports, financial decision-making models and lean accounting principles, which will influence the decision-making of all a company's stakeholders.

1.9 Layout of the study

The study is divided into eight chapters that will narrate the procedures of how the research objective of this study was approached and how it was attained. The remainder of this chapter sets out the chapters of the study:

Chapter 1: Introduction and background to the study

This is the Chapter that presents the introduction and background of the study. Formulating the problem statement and motivating the reason for the research due to the lack of integration. The primary and secondary objectives of the study emanates from the findings, motivation and problem statement. The chapter also briefly explained the research methodology, where after the chapter concludes with an overview.

Chapter 2: Development and application of accounting standards

In Chapter 2 the literature about the development and application of quality accounting standards will be reviewed. Furthermore, the chapter determines the reasons behind

the global implementation of international accounting standards while finally consider economy, cultural and political influences. The aim of this chapter is to address the first three secondary objectives (Section 1.4.2, page 6) and to set the tone for the introduction to the development of an integrated financial decision-making model (Section 5.1, page 96).

Chapter 3: Stakeholders' financial decision-making principles and models in perspective

Focusing on literature in various sources including; relevant textbooks, peer-reviewed journal articles, newspaper articles and the Internet that promulgate the design of integrated accounting information systems that consider financial and non-financial users. The objective of Chapter 3 is to investigate the decision-usefulness objective of accounting information for stakeholders by placing financial decision-making principles and models in perspective. Firstly, the chapter focusses on the fourth secondary objective (Section 1.4.2, page 6) namely to determine the purpose and information requirements of stakeholders' financial decision-making in terms of the general purpose accounting reports. The characteristics and concepts that measure the decision usefulness of accounting information that create change and add value to the stakeholders are considered next. Furthermore, the chapter determines the influence of traditional accounting-based and modern value-based financial performance measures on stakeholders' decision-making, the fifth secondary objective (Section 1.4.2, page 6). Finally some consideration is given to how financial decision-making making models can be improved.

Chapter 4: Influencing decision-making using lean accounting

This chapter focusses on literature in various sources including relevant textbooks, peer-reviewed journal articles, newspaper articles and the Internet that promulgate lean accounting principles. The objective of Chapter 4 is to investigate the improvement of decision-usefulness objectives of accounting information for stakeholders by implementing lean accounting principles by achieving the sixth secondary objective (Section 1.4.2, page 6) would be addressed. Firstly, the chapter introduces the lean philosophy before considering the value of implementing lean accounting in a company. Secondly, the influence of value streams on decision-making is discussed before finally

some consideration is given to important aspects in the development of an integrated financial decision-making model.

Chapter 5: Research methodology

Chapter 5 explains the philosophical paradigm and research methodology that applies to this study and further discusses the research design and methodology used along with justifying the appropriateness of the methodology. Furthermore, a discussion follows on how the data were obtained ethically. This was done by applying a hybrid methodology that used grounded theory and multiple case study together with document analysis. The Chapter concludes with a summary of the findings.

Chapter 6: Development of an integrated financial decision-making model

Unmistakably this chapter can be hailed the focus of the study. The primary objective was to develop an integrated financial decision-making model using lean accounting principles that will lead to more conservative results that will influence the decision-making of all the company's stakeholders whether or not using different accounting standards, this was accomplish here. Criticisms of current decision-making models and an explanation of previous studies on financial decision-making models form the introduction to the chapter. The chapter highlights the motivation for the development of an integrated financial decision-making model using lean accounting principles that support stakeholders' financial decision-making requirements. Prominence is given on how the development of the model was based on a framework that was designed to establish the integrated financial decision-making model using lean accounting principles.

Chapter 7: Data analysis and results

In Chapter 7 the data analysis and research results are reviewed while also explaining the development of the integrated financial decision-making model, discussing the methods along with the sampling methods. Reference is also made to findings in Chapter 2 to 6 and furthermore discusses feedback and interpretation obtained from the research.

Chapter 8 Epilogue – Concluding, recommending and reflecting

The study concludes with Chapter 8, which summarises the research that is documented in the thesis. Based on the final results, the chapter discusses the contributions and benefits of the developed integrated financial decision-making model using lean accounting principles and comment on the achievement of the research objectives that was set out in Chapter 1. The chapter then discusses identified limitations and how it was mitigated, which is followed by an indication of suggested areas for future research from a theoretical as well as a practical perspective before concluding.

1.10 Summary

The chapter provided a background and set out the scope of the study of development of an integrated financial decision-making model using lean accounting principles. It expounds on the problem statement as it relates to critiques on current financial accounting disclosure that only provide basic or event level information on which future decisions must be made. The integration of financial accounting disclosure, integrated reporting, financial decision-making models and lean accounting will influence disclosure, integration, reliability and relevance of information for decision-making. The chapter also formulated the objectives of the research, the research methodology used, and the contributions of the study and finally provided the structure and organisation of the study.

In conclusion consider these words of Bill Clinton, former president of the USA, "t*he price of doing the same old thing is far higher than the price of change."* Reflecting on these words, remembering that the value of accounting depends on information that is useful, of high quality, and influences the stakeholders' decision-making ability.

The following chapter provides an overview of the development of accounting standards, the importance of high quality and harmonised accounting standards, the influence of culture and globalisation on the development and implementation of international accounting standards. Finally considers the possible coexistence of political influences and international accounting standards.

CHAPTER 2

DEVELOPMENT AND APPLICATION OF ACCOUNTING STANDARDS

"To improve is to change; to be perfect is to change often." - Winston Churchill

2.1 Introduction

In this chapter the importance of the development and application of accounting standards are reviewed and put in perspective. The review includes what is meant by accounting standards and why high quality and harmonised standards are important to maintain the intrinsic value for the accounting profession. Accounting standards are concerned with the development of a framework whereby structure is given to accounting theory, based on principle and/or rule in order to effectively disclose the transaction history of an entity. Transactions have changed due to Internet and global trading resulting in more cyber trading.

As a result, accounting bodies need to develop and implement vigorous and innovative International Accounting Standards (IAS). As accounting standards converge, the challenge for the standard-setting bodies remain to develop high quality accounting standards that would be globally accepted and useful for all stakeholders. By developing IAS, cultural and political influence must be considered as it influences the adoption and acceptance of accounting standards. Politics influences every level of society and accounting is no exception. The ruling political parties have their own agendas and ideas on the governance of a country, opening the debate whether it is possible that there could be coexistence between political influences such as the rights and needs of all stakeholders and international accounting standards.

Accounting is a highly regulated profession and the development of any integrated financial decision-making model needs to adhere to a minimum set of accounting standards, for it to be accepted and approved by the accounting establishment. Currently financial decision-making models are directly influenced by International Accounting Standards (IAS) and International Federation of Accountants (IFRS).

Financial decision-making are influenced by accounting standards that constantly develop due to the changing business environment, the development of accounting

standards are discussed next. This is followed by a discussion on how the accounting profession reacted to challenges due to an increase in international trade by providing reliable, quality and consistent accounting information. The importance of quality accounting standards is discussed, followed by how culture and politics influence development, before commenting on the implementation of IAS and finally the chapter concludes with a summary. This summary indicates how the first three secondary research objectives (Section 1.4.2, page 6) were achieved.

2.2 Development of accounting standards

The development of accounting standard dates back to early civilisation where small villages and communities started to record what was owned and owed. These communities accounted for property (assets) to prove legal ownership. Accounting records dating back as far as 200 BC were discovered in the Babylonian ruins (Glad & Becker, 1994:1). The increase in trade between different communities led to the development of a financial information system that recorded transactions about capital, assets and liabilities.

The double-entry bookkeeping system is regarded as the first modern form of accounting and still remains the corner stone of the current accounting system. The significance of this is that Luca Pacioli narrates the double-entry process in a mathematical book *Summa de Arithmatica, Geometria, Proprotin and Proportionality* in 1494. Pacioli's book describes the accounting process, using journals and ledgers, year-end closing entries and the trial balance to prove the ledger balance. The book also made reference to the certification of books, ethics and cost accounting. Edwards (1989:52) proposes that Pacioli's work on accounting practices were developed to aid the reporting needs of Venetian merchants during the Italian Renaissance.

In more than 500 years only moderate changes to Pacioli's system was done. Notable changes include; the development of the balance sheet and the refinement of the income statement after World War II, as the world rebuild its infrastructure and production capacity (Glad & Becker, 1994:5). During the 1960s, the increase in international trade resulted in pressure on the accounting profession caused by discussions among investors about the differences in accounting standards between different nations, and the need for IAS (Camfferman & Zeff, 2007:142). This was

reiterated by Crosby (2014:43) as prior to the early 1970s; each country established and implemented its own set of accounting standards.

The differences in accounting standards between different nations particularly in recognition and measurement resulted in a lack of comparability, which led to inefficient utilisation of global capital (Yallapragada, 2012:286). The International Congress of Accountants held in Sydney in 1972 established the need for an international body to address these concerns. This led to the constitution of the International Accounting Standards Committee (IASC), a private sector body with members from the accounting profession in various countries, in 1973.

During the period spanning from 1973 to 1987 the IASC only agreed upon standards, many of these standards, however, allowed alternative treatments, resulting in much criticism. This practice of the IASC's negatively influenced its impact on accounting practice. Concerns in the early years of the IASC and the fact that it was not widely known and recognised (Camfferman & Zeff, 2007:187) initiated the formation of the IFAC in 1977. The IFAC applied pressure on the IASC to involve the federation in the standard-setting tasks, however, the IFAC only had voting rights since 1982 for appointing IASC board members after the signing of an agreement of mutual commitment.

The 1980s saw further development of the balance sheet (statement of financial position) providing relevant information about operating, financing and investing activities and the effects of it on cash resources. Furthermore, the IASC approved a conceptual framework project in 1989 that aimed to produce useful financial information (Gaffikin, 2008:89) and reduce uncertainty of underlying concepts for the preparation and presentation of financial statements (IASB, 2010:A27) for all stakeholders. Camfferman and Zeff (2007:193) accentuates that the IASC's project relied on the efforts of volunteers and the support from the employers of its members, and was not transparent to the public on matters such as total votes for issuing standards or dissenting views. With the rapid changing global business environment during the 1990s a growing acceptance of accounting standards issued by the IASC also became evident with the completion of a set of IAS in 1998. In 1998 IASC made a strategic decision that the standard-setters should be global and an independent organisation that is separated from the accounting profession.

Following this strategic decision, IASC was subsequently restructured and renamed the International Accounting Standards Board (IASB), and the accounting standards became IFRS. The mandate of the IASB to provide standards that are understandable and enforceable (Van Wyk & Taylor, 2004:42), which provide consistency and transparency of financial information (Quinn, 2004:35). The Enron, Global Crossing and WorldCom accounting scandals resulted in the reconsideration of the suitability of accounting standards.

In an attempt to save face value and restore stakeholders' confidence in the accounting profession, the IFAC established the Forum of Firms (FoF). Street (2002:75) supported by Crosby (2014:45) explains the objective of FoF as an assistant of the IFAC in the development and enforcement of international accounting and auditing standards, in an attempt to improve the global standard of financial reporting and protect the interests of all stakeholders. IFAC (2013) argues that the world's largest accounting firms, who attend FoF meetings have committed to adhere to and promote the consistent application of high quality accounting and audit practices worldwide, which substantiate the Public Interest Theory (PIT) (Crosby, 2014:45).

The FoF does not have the authority to create regulations for financial reporting, therefore diminishing the risk of regulatory capture by accounting companies. The IASB has sole responsibility for the setting of accounting standards and which are activities being overseen by a body of trustees from various countries and professional backgrounds, known as the IFRS Foundation. These trustees serve the public interest and are accountable to a group of public capital market authorities (the Monitoring Board) whose responsibilities include referring financial reporting matters of broad public interest to the IASB, through the IFRS Foundation (Deloitte, 2013).

The IFRS Foundation (2013) explains that the IASB aims to engage with stakeholders (investors, regulators, business leaders and the global accountancy profession) at every stage of the stand-setting process and collaborates with the worldwide standard-setting community where necessary. However, Brown and Van der Zahn (2007:43-51) argue that regulatory bodies such as the IASB have the ability not only to include as members those economically powerful groups who can exert influence over entities (such as accountants from the "Big Four" companies or developed world), but also to exclude other, perhaps non-financial groups from membership. Crosby (2014:45) proposes that these other groups may provide better insight into issues such as health, poverty,

climate change, employee rights and other issue, for which future accounting decisions may be passed. Gaffikin (2008:90) supports this argument, stating that it has become widely accepted that accounting presents an economic reality that has been shaped by dominant and powerful economic forces. Some of the stakeholders are left in the dark by these dominant and powerful economic forces that use accounting to create a convenient economic reality. These dominant and powerful economic forces not only include large international companies, but also other institutional organisations such as the World Bank and International Monetary Fund (IMF) (Crosby, 2014:46) and governments therefore again undermine the usefulness of accounting information.

The usefulness of accounting information is described in the Conceptual Framework for Financial Reporting (The Framework), which states that "*the objective of financial reporting is the provision of useful information to 'existing and potential investors, lenders and other creditors in making decisions about providing resources' to the reporting entity"* (IASB, 2010:A27). From the previous sections it is evident that; IAS are necessary and the evolution over the past four decades was quite engrossed. Potential users of accounting may consider how the development of accounting standards will be useful to help to understand the reasoning behind the disclosure procedure. Bertomeu and Cheynel (2013:813) agree with Woods and Margison (2004:386), Chee Chiu Kwok and Sharp (2005:74) that trends have seen efforts to place many domestic accounting standards under the common umbrella of IAS and therefore the authenticity of accounting information relies on harmonisation of accounting standards.

The next section specifically deals with the importance of harmonising accounting standards to ensure that similar transactions and events are treated consistently around the world.

2.3 Harmonising of accounting standards

The increase in international trade requires the accounting profession to record and disclose accounting information that is reliable, of a high quality and consistent. These requirements are consistent with the qualitative characteristics of financial statements in the IASB Conceptual Framework. This puts pressure on the profession to develop a universal set of accounting standards and highlight the importance for the harmonisation of IAS. Globalisation of the world's economies unavoidably placed pressure on the accounting profession to establish a single set of financial reporting

standards. Developing these financial reporting standards is ultimately the role the IASB and its predecessor IASC fulfil. Chand and White (2007:606) argue that the development for a single set of financial reports is based on the economic principles to achieve global harmonisation. According to Choi, Frost, and Gary, (2002:291) accounting harmonisation relates to the process of reduction of inconsistent accounting standards in order to reach a better international comparability of financial statements

Reasons that support accounting harmonisation includes the development of capital markets as an economic resource distributor, cross-listing of multinationals, and activities of institutional investors (Ding, Hope, Jeanjean, & Stolowy, 2005:325). The global users of accounting information need reliable, unified and high quality accounting information on which decision can be taken. Ding *et al*. (2005:326) explain that the activities of global users propel domestic companies to adhere to global accounting standards. The adherence to global accounting standards enhances accounting's consistency.

Consistency in the application of accounting standards are of utmost importance, however, some transactions and events are only generally or not definitely addressed in the accounting standards. Schipper (2003:62) explains that consistency with regard to the application of accounting standards is postulated to achieve comparability of financial statements. Accounting professionals have a number of accounting standards that are available to achieve the comparability of these financial statements.

Accounting professionals sometimes need to use judgement when applying these accounting standards to particular transactions or events that may result in inconsistency. Wüstemann and Wüstemann (2010:1) conclude that a consistent application presupposes the existence of specific standards in order to form the accounting users' judgement. Wüstemann and Wüstemann (2010:1) further argued that the reliance on principles only, fails to ensure a consistent application as it allows accounting users' to apply judgement differently in identical cases. Consistent application of accounting standards is influenced by the user's sympathy or philosophy to the rule-based- or principle-based approach.

ICAS (2006:14) predicts that the rule-based approach shall structure the accounting users' judgement, without dictating the use of any specific accounting method. Standard-setters, however, regard the principles-based approach to standard setting

helpful for internal consistency of accounting standards (IASB, 2008:BC2.46). Alexander and Jermakowicz (2006:150) argue that principle-based accounting standards restrict accounting users' judgement that follows from the objective to achieve a consistent application that undermines the relevance of financial reporting information.

Principle-based accounting standards sometimes permit accounting users to choose between several different accounting methods. Principle-based standards allow accounting users to deliberately find innovative ways to change regulated accounting issues and influence the reporting of accounting information to have a more favourable outcome (Healy & Palepu, 1990:97). However, the adoption of a prescriptive global set of accounting standards is further complicated by the fact that IFRS is principle-based as opposed to rule-based, implying that the following accounting values are important; professionalism, flexibility, and transparency (Schutte & Buys, 2011:23). Smith and Warner (1979); Sweeney (1994); Beatty and Weber (2003) provided empirical evidence that accounting users deliberately make use of this flexibility when applying accounting standards.

This flexibility in the choice of accounting policies have a negative influence on the reliability, trustworthiness and usefulness of accounting information to the accounting users. This influence increase costs (Watts & Zimmerman, 1990:135) as additional reports (Watts & Zimmerman, 1986:213; Mohrmann, 1996:81) need to be conducted to protect the accounting users from "creative accounting". Leftwich (1983:28-29) assesses that another downside of vague principles are the uncertainty that is created in terms of the quality of the accounting information and the increase in the risk of litigation between the accounting users.

Inconsistencies between the objectives, qualitative characteristics and general recognition and measurement criteria in the IASB Framework as well as between the requirements and guidance in certain standards and interpretations permit accounting users to sometimes arbitrarily choose between different accounting policies in the absence of clear guidance. Alexander and Jermakowicz's (2006:150); Wüstemann and Wüstemann (2010:21) agree that the objection of absolute consistency of all accounting principles is not achievable. Guenther (2005:5-8) predicts that accounting information is only efficient, reliable and useful if it satisfies the accounting users' requirements and there is consistency in the determination of relevant accounting numbers. The following

section discusses how the harmonisation of accounting standards influenced worldwide financial reporting.

2.3.1 Worldwide financial reporting

The harmonisation of accounting standards is an irreversible international accounting trend that developed due to globalisation many years ago. Accounting is accepted as a worldwide business language (Moussa, 2010:89) that should naturally move towards internationalisation. The increase in international trade (Benston, Bromwich, & Wagenhofer, 2006:168), development of economic conditions both domestic and internationally (Sunder, 2002:221) as well as the changes to equity markets (Benston *et.al*, 2006:168) have an influence on accounting standards. These changes are not only manifesting in western countries but eastern countries also implement new accounting standards (Tsunogaya & Chand, 2012:118).

Chand and White (2007:617) indicate that worldwide financial reporting primarily serves the interests of the countries represented on the IASB, multinational and international accounting companies. Furthermore, Chand and White (2007:617) argue how accounting users employ accounting standards to create and sustain asymmetries and imbalances within and between countries. Therefore, accounting standards create and sustain imbalances and uneven distribution of wealth (Cooper, Neu & Lehman, 2003:469; Graham & Neu, 2003:360).

Accounting research literature suggests empirical evidence that the adoption of IAS have worldwide economic and financial reporting consequences. These studies examined the effect that the adoption of accounting standards have on market liquidity (Daske, Hail, Leuz & Verdi, 2008), implied cost of equity capital (Lee Walker & Christensen, 2008; Li, 2010), share price synchronicity (Beuselinck, Joos, Khurana & der Meulen, 2010), share return volatility (Landsman, Maydew & Thornock, 2012), cost of debt (Florou & Kosi, 2009), credit ratings (Wu & Zhang, 2014), analyst forecast accuracy (Byard, Li & Lu, 2011), and institutional investor ownership (Florou & Pope, 2009; DeFond, Hu, Hung & Li, 2011). The above studies all report a commonality that show that as countries adopt and converge IAS the value relevance of earnings increased. However, this phenomenon is more evident for companies that need to attract more capital from external investors. Suggesting the adoption and convergence

of IAS narrow the gap in competitiveness across companies with varying degrees of government support (Lee, Walker & Zeng, 2013:19).

Worldwide financial reporting only satisfies the needs of some dominant stakeholders. Chand and White (2007:617) support the argument that professional accounting bodies and large multinational accounting companies prefer accounting standards to be determined according to the process of convergence. It was these multinational accounting companies that were influential in establishment of the IASC in the early 1970s (Rahman, Perera & Ganesh, 2002:73). Schutte and Buys (2011:23) suggest that implementing a prescriptive global set of accounting standards, Gray's (1988) accounting values should be present. Gray's (1988) accounting values module is discussed in Section 2.5 (page 33).

From the above it is evident that there is support for the establishment of global accounting standards that converge. It would level the international playing field and promote business and reporting.

2.3.2 The influence of globalisation and convergence of accounting standards

Globalisation refers the large and growing flows of trade and capital investments between countries (Hirst & Thomson, 1996:48). Convergence as defined by the Oxford dictionary (2006:159) is the "coming together of things from different directions and eventually meets." International accounting standards are the effect of the coming together of the IASB and different countries accounting regulatory bodies issuing new regulations in the name of IFRS. Furthermore, the Collins dictionary (1986:188) defines convergence as "the evolutionary development of a superficial resemblance appearing to be real or true until examining it more closely between unrelated animals that occupy a similar environment." Collins (1986:292) explains it as the evolution of wings in birds and bats. By considering this definition of convergence, it seems that different countries occupy similar accounting environments until it is examined more closely. Accounting standards differ from country to country, with the convergence of accounting standards different countries' jurisdictions will approach similar economic transactions soliciting the same accounting priciples.

By explaining the international convergence of accounting standards Moussa (2010:89) itentifies the following important elements; 1] it represent progress, and direction for future development; 2] does not equal identicalness; 3] is a process and 4] mean

interaction. It can be concluded that convergence furthers harmonisation and embodies the requirements of integrating international economies. Any company that hopes to remain in the international market cannot afford to disregard the trend of international convergence.

Convergence requires concerted and maximum effort to be realised. Countries differ in economic environments, legal systems, cultural philosophies, regulatory structures, users of accounting information and quality of accountants. Convergence is not possible without paying due attention to national or environmental influences. Due to different national characteristics, countries need to continuously and actively carry out voluntary cooperation, study new situations, address new issues and innovate new mechanisms to create a structure which meets such requirements as international efficiency, equitability, sovereignty, and development of global diversity. Convergence is not by any means a one-way movement.

Interaction between different countries, between individual countries and IASB, and between IASB and regional professional accounting bodies are nessecarry to be effective. All stakeholders need to communicate with each other, to draw upon from each other, and to obtain mutual recognition from each other. International convergence in a world of diversities is filled with many challenges. Open communications between stakeholders will ultimately mean progress, while the inability of this will compromise the effectiveness and efficiency of convergence. Global convergence of accounting standards is driven by the economic globalisation, the countries national accounting standards constantly evolve with the international comparison and harmonisation to establish a common global accounting standards.

Chapter 1 (Section 1.1, page 1) highlighted accounting internationalisation and convergence of accounting standards as one of the critical issues in accounting research. The perception seems to be that accounting must be harmonised or converged to make it more useful and widely acceptable to all stakeholders in different markets or nationalities. International convergence of accounting standards is a global trend (Moussa, 2010:89) that began in the 1990s. In 2001 the IASC was reconstituted as the IASB with one of its objectives to achieve full convergence of local accounting standards and international standards. The philosophy behind this objective was to develop a single set of high quality, understandable, enforceable and useful IAS that is globally accepted. Qiong and Jianjun, (2012:921) conclude*: "With internationalization of*

businesses and investment, internationalization and convergence of accounting has become an unavoidable aftermath of joint efforts of international and national accounting regulatory and authoritarian organizations." By measuring convergence of national accounting standards with IFRSs Fontes, Rodrigues and Craig (2005:416) explain that in countries like; Iceland, Japan and Saudi Arabia the influence of tax law on accounting is much greater than the influence of the accounting profession.

If accountants are business partners, expected to provide relevant information for decision-making, they need to examine the environment, apply adjustments to accounting data before analysing it in order to supply quality integrated financial reports to the users of the financial information. Moussa (2010:91) posits that the objective of international accounting convergence is to find appropriate ways to work together to build a global system of high quality accounting standards. High quality globally accepted accounting standards, maintain and promote global economic stability and development of local companies. Ding, Hope, Jeanjean and Stolowy (2007:2) contest that although accounting standards are important, determinants of financial reporting quality, these standards differ across countries.

It is a common perception of accounting professionals that these differences reduce the quality and the relevance of accounting information. Proponents of harmonised international standards claim that if all companies follow the same set of accounting standards, external financial reports of companies would provide more uniform disclosures and more useful accounting information to investors (Purvis, Gemon & Diamond, 1991:30). Adapting to IAS will also have intangible advantages to companies. The intangible advantages includes; easier access to capital market (Soderstrom & Sun, 2007:687), ability to charge higher prices for products or services and attract more experienced staff (Naoum, Sykianakis & Tzovas, 2011:60). Fox, Helliar, Veneziani and Hannah (2013:86) argue the reason for this is due to the company's reputation of being more transparent than their competitors. Daske, Hail, Leuz and Verdi (2009:538) theorise that adopting companies will have a significant decline in cost of capital as well as substantial improvements in market liquidity.

Therefore it can be deduced that adhering to IAS increase comparability and usefulness of accounting information of companies across markets and countries. This facilitates cross-border investment and capital market integration. Qiong and Jianjun (2012:920) conclude that while other disciplines put more emphasis on relevance, the accounting

profession regard reliability more acceptable than relevance. Besides these advantages of implementing IAS, the financial statements will be of a higher quality. In the next section reliability is considered in terms of the importance of high quality accounting standards.

2.4 The importance of high quality accounting standards

In terms of quality the vernacular is what distinguishes one thing from another, the standard of how good something is measured against other similar things (Oxford, 2006:611). Collins (1986:690) states that quality is an attribute of the nature of something and gives status. Quality is, however, far more than this, becoming evident from Pirsig's (1999) Zen and the Art of Motorcycle Maintenance (ZAMM). Quality influences business, occupation, trade, ethics, and professionalism (Elkins, 2013:44). These influences of quality are evident in the following:

i. *"In a sense . . . it's the student's choice of Quality that defines him"* (Pirsig, 1999:250).
ii. *"Care and Quality are internal and external aspects of the same thing. A person who sees Quality and feels it as he works is a person who cares. A person who cares about what he sees and does is a person who's bound to have some characteristics of Quality"* (Pirsig, 1999:275).
iii. *"Quality decreases subjectivity. Quality takes you out of yourself, makes you aware of the world around you. Quality is opposed to subjectivity"* (Pirsig, 1999:239).
iv. *"When you're really stuck its Quality . . . that tells you where you ought to go"* (Pirsig, 1999:282).
v. *"Work that entails caring and Quality requires that we 'cultivate' peace of mind and do so in a way that"* (Pirsig, 1999:297).
vi. *"We may come to the idea of Quality with different visions of reality but as a practical working matter, "you can actually see" Quality in the work of "skilled mechanics and machinists of a certain sort, and you can see it in the work they do. . .. They have patience, care and attentiveness to what they're doing, but more than this—there's a kind of inner peace of mind that isn't contrived but results from a kind of harmony with the work . . ."* (Pirsig, 1999:296).
vii. *"You have to have some feeling for the quality of the work. You have to have a sense of what's good. That is what carries you forward. This sense isn't just something you're born with, although you are born with it. It's also something you*

can develop. It's not just 'intuition,' not just unexplainable 'skill' or 'talent.' It's the direct result of contact with basic reality . . .. "(Pirsig, 1999:284).

Quality has the power to unite as explained by Tweedy (2013:91) who is in agreement with Pirsig's (1999:257) conclusion that it unify religion, art and science. A prerequisite of quality is peace of mind, going beyond romantic and clinic quality and unites the two Pirsig (1999:295). Pirsig (1999:294-295) deduces that peace of mind due to quality is not all superficial, the workability of the machine is just an objection of peace of mind, the ultimate test is own serenity (Pirsig, 1999:165), and it answer the question of; does it work? This question of whether it works, use measuring instruments, specifications and quality control to put the mind at ease. Tweedy (2013:91) demonstrates that Pirsig's actual cycle is oneself and how dichotomy, a separation between two things that are opposed or different (good and evil), (Greek origin – *dikhotomia* – a cutting in two) (Oxford, 2006:205) between human and technology (Pirsig1999:325) lead to peace of mind.

Pirsig (1999:296) argues peace of mind is inner peace and has no relationship with the external circumstances, however, peace of mind occurs on three levels of understanding namely; physical, mental and value quietness. Pirsig (1999:297) outlines that "*peace of mind produce right values, right values produce right thoughts; right thoughts, produce right actions and right actions produce work which will be a material reflection for others to see the serenity at the centre of it all a material reflection of to a spiritual reality*." Pirsig (1999:276) demonstrates that quality is the pursuit of the answer to the whole problem and suggests logic presumes a separation of subject from objective; therefore logic is of the final wisdom (Pirsig, 1999:143).

Brundenell (2007:289) explains that quality must be converted to numbers if it is to be respected; the nature of accounting is such that financial information is used to determine the financial performance and position of the company. However, Pirsig (1999:319-320) illustrates truth traps concerned with data are apprehended and are within the "*boxcars of the train*". For the most part, the data are properly handled by conventional dualistic logic and scientific method. But the trap is the truth trap of yes-no logic. "*Yes and no, this and that, one or zero on which all human knowledge is build this two-term discrimination"* (Pirsig, 1999: 320). Quality is better (Pirsig, 1999:285) than this two-term discrimination. A third logical term equal to yes and no that is capable of

expanding understanding in an unrecognised direction is the Japanese term *mu* meaning no thing. Pirsig (1999:320) explains that *mu* like quality is outside the process of dualistic discrimination. *Mu* has no class, it is not zero, not one, not even yes or no.

Pirsig (1999:321-322) explains "*that in motorcycle maintenance mu answer given by the machine to many of the diagnostic quality put to it is a major cause of gumption loss. It shouldn't be! When your answer to a test is indeterminable it means one of two things; that the test procedures aren't doing what you think they are or that your understanding of the context of the question needs to be enlarged. Check your test and restate your question. Don't throw away the mu answers! It is every bit as vital as the no answers, it are the ones that grow on you!"*

Brundenell (2007:289) proposed that *mu* answers are important, as it tells the scientist that the context of the question is too small for nature's answers. Wieland (1980:308) argues there is need for *mu* answers. Pirsig (1999:321) assesses that *mu* is important as the answer is beyond the hypothesis as it is the phenomenon that inspires scientific enquiry in the first place. Brundenell (2007:289) argues that the brain is preprogramed and believes that there is greater value in definite answers. It is culture that makes a low value judgement on its *mu* answers (Pirsig, 1999:321).

Quality is not different but people are different due to experience and quality is the continuing stimulations that the environment puts upon us to create the world in which we live (Pirsig, 1999:250). Ashe (2013:67) demonstrates that in ZAMM Pirsig's (1999) commitment to quality is a duty towards oneself and ethic. Pirsig (1999:73) proposes "*quality is a virtue, excellence, a duty to oneself which moves the Greek warrior to deeds of heroism. It is not a duty towards others but a duty himself, Greek arête which means excellence*." Elkins (2013:41) concludes that Pirsig reminds us to the real cause, oneself and that the real cycle one works on is a cycle called you. The machine that appears to be "out there" and the person that appears to be "in here" are not two separate things. These two things can ultimately grow towards quality or fall away from it. "*A life in law is a paradox: profane and mythic, a volatile marriage of lex and logos. What lawyers need is enough philosophy to help them live with the grinding reality of the work they undertake, and to live with the clash of images of lawyer that we find in the legal profession, in society, and that we carry with us in our own heads"* (Elkins,2013:41). The same principle applies to accountants having to up hold the accounting standards and at the same time provide useful information to all

stakeholders for decision-making purposes. What is needed is an integrated decision-making model that prompts accountants to reflect on producing relevant, timeous and useful information for all stakeholders.

It is important to note that Pirsig (1999:250) discusses differences between people in terms of experience and not quality. The reason for convergence of accounting standards also explains the differences between different countries and not differences between accounting standards that could be a major influence on adjusting to IAS. The accounting profession has many measuring instruments, specifications and quality control tools to put the stakeholder's mind to ease. These measuring instruments, specifications and quality control tools are the accounting standards that companies need to comply with.

Brundenell (2007:289) explains that quality must be converted to numbers if it is to be respected; the nature of accounting is such that financial information is used to determine the financial performance and position of the company. Again this is evident that accounting conferee with quality characteristics. Pirsig (1999:281) explains the difference between a good mechanic and a bad one "*like the difference between a good mathematician and a bad one, is precisely this ability to select the good facts from the bad ones on the basis of quality*". Pirsig's (1999:285) diagnosis for poor quality work is the result of a "*spectator attitude*, which emanates from *that strange separation of what man is from what man does. ..* ." This separation leaves people not caring about what they do as it is considered unimportant or it is taken for granted. Pirsig's (1999:285) concludes that this lead too many foolish and costly mistakes as care influences quality (Pirsig, 1999:49). Furthermore, Pirsig (1999:275) points out that care and quality are "*internal and external aspects of the same thing as a person who sees quality and feels how it works is a person who cares*".

Accounting quality that is influenced by company's overall institutional setting, the legal and political system and cultural influences of the country fall within this characteristic of quality as argued by Pirsig (1999). With the reference to accounting quality which has the same characteristics, it could be to the benefit of this study to consider some of the other characteristics of quality as discussed by Pirsig and other authors. Accounting standards will enhance the usefulness of the accounting information to the stakeholders and will be helpful in the decision-making process.

Accounting standards is the one thing that distinguishes a good business decision from a bad one. High quality global accepted accounting standards are important for developing, promoting and sustaining local and global economic stability and integration. Providing high quality accounting standards will enhance reliability, increase the usefulness of accounting information for decision-making purposes of stakeholders as supported by Joshi and Al-Mudhahki (2013:45) and Lee *et al*. (2013:5). Several studies report improvements in accounting quality following the adoption of IAS (Barth *et al*. 2008; Daske, Hail, Leuz and Verdi, 2008).

Reasons for the improvements in accounting quality through IAS have also been extensively studied. Ball (2006:13) concludes that these standards were originally designed for developed capital markets and therefore, more relevant to investors, while Jeanjean and Stolowy (2008:489) argue that it reduces the alternative accounting methods, leading to lower earning management. IAS require higher quality measurement and recognition rules (De Franco, Kothari & Verdi, 2010:897-901) that reflects the company's underlying economic position more thoroughly and is therefore more transparent than local accounting standards (Ding *et al*., 2007:28).

The implementation of IAS around the world is bringing about improvements in the quality of accounting (Bhattacharjee & Islam, 2009:165) leading the way for better decision-making for all stakeholders. The literature is divided between whether there is an improvement of accounting quality and the implementation thereof. Christensen, Lee and Walker (2008:2) reason that the adoption of IAS does not undoubtedly lead to higher accounting quality. Barth *et al*. (2008:467); Joshi and Al-Mudhahki (2013:45), however, corroborate some improvements in accounting quality following the voluntary adoption of IAS. Bhattacharjee and Islam, (2009:167) discuss the mixed findings relating to accounting quality and adoption of IAS. The fundamental economic function of accounting standards is to provide *"agreement about how important commercial transactions are to be implemented"* (Ball, 1995:19).

By reaching an agreement on the treatment and implementation of similar transactions, it will eliminate different treatment possibilities by stakeholders and improve accounting quality (Barth *et al*., 2008:467). Ashbaugh and Pincus (2001:431) and Hope (2003:249) propose that higher quality accounting standards make reported earnings less noisy and more accurate. Barth *et al*., (2008:497) found that companies from 21 countries applying IAS generally reveal less earnings smoothing, less managing of earnings

towards a target, more timely recognition of losses, and a higher association of accounting amounts with share prices and returns than when matched companies applying domestic standards. The converse are also demonstrated whereby low-quality reporting "flatten" reported earnings (Ball, Kothari & Robin, 2000:42; Ball, Robin & Wu, 2003:253).

Bhattacharjee and Islam (2009:171) supports Barth *et al.* (2008:468) and Hail, Leuz and Wyssocki, (2009) that to ensure a high quality corporate financial reporting environment it depends on effective enforcement mechanisms and that merely adopting international accounting and auditing standards are not enough. A single set of accounting standards by itself does not guarantee the comparability of companies' reporting practices, neither within a country nor across countries. Hail *et al*. (2009:5) argue that comparability in reporting practices is unlikely to occur as long as companies' reporting incentives differ, which indicates that reporting comparability is not just a matter of enforcement.

The effects of accounting standards cannot be viewed in isolation from other elements of a country's institutional infrastructure. In well-functioning economies, the key elements of the institutional infrastructure fit and reinforce each other. Hail *et al*. (2009:5) propose that the changing of a country's accounting standards, which is one of the elements of institutional infrastructure, can lead to undesirable outcomes for the economy as a whole, even if the change unambiguously improves the accounting standards.

Although there are significant benefits to implement high quality IAS and its increasing importance in the current global economic situation, there are still many challenges in development and authoritative implementation. Sawani (2013:1) explains that these challenges are influenced by factors such as, social and cultural values; political and legal systems; business activities and economic conditions; standard-setting processes; capital markets and forms of ownership; and finally cooperative efforts by nations. Accounting quality is therefore a function of the company's overall institutional setting, including the legal and political system and cultural influences of the country in which the company resides.

2.5 External influences on the development of accounting standards

External influences also affect the development of accounting standards. These external influences include, among others, the cultural and political influences of society. These two external influences are discussed in the next section.

2.5.1 Cultural influences

Cultural influence plays an important role in any society, and many a battle have been fought due to it. Culture influence the way in which we deal with life, one could say it is part of everybody's DNA. Hofstede (2001:1) define culture as the collective programming of the mind that manifests itself not only in values, but also in more superficial ways like, symbols, heroes, and rituals. Zurlini, Petrosillo, Bozsik, Cloud, Aretano and Lincolin (2015:2) demonstrate the need to consider societal values as it forms the root of rigidity. Therefore it should not be surprising to see how the development of accounting standards is influenced by culture.

The Harrison and McKinnon's (1986) study proposes a new methodological framework when studying corporate reporting regulation and accounting policy formulation, which is nothing else than the development of accounting standards. The development of accounting standards is viewed as a social system and by using a change analysis the characteristics of the system is determined at nation specific level. The framework allows examination of the system's norms and values; the nature of its interdependencies both internally and with other social systems; the factors to which the system is especially sensitive; and the way in which culture influences the form and functioning of the system's elements.

The Harrison and McKinnon (1986) study lead the way in developing the conception of accounting values by Gray in 1988 and the Schwartz's cultural dimensions of values in 1994 on culture influence accounting by linking it to the Hofstede's cultural dimensions model. Zurlini *et al.* (2015:2) states that the Schwartz's value theory is one of the most widely cited value frameworks.

2.5.1.1 Hofstede's cultural dimensions model

Hofstede developed country-based indices corresponding to four key dimensions of national culture for each country surveyed. The survey was based on an attitude survey

of IBM employees in 66 countries during the 1970s. This model describes cultural differences and consequences between nations, societies, and regions. The four key dimensions of culture, which have century-old roots (Hofstede 2001:73), are; power distance, individualism, masculinity and uncertainty avoidance. The elements of the four key dimensions are defined as:

- *Power distance:* The extent to which the less powerful members of society accept that power is unequally distributed.
- *Individualism:* In individualistic societies there are few ties beyond those of the nuclear family, whereas in collectivist societies people belong to strong, cohesive in-groups.
- *Masculinity*: In masculine societies where men are assertive, tough, and concerned with material success, whereas women are more modest, tender, and interested in the quality of life. In feminine societies, both are equally concerned with quality of life.
- *Uncertainty avoidance:* The extent to which people feel threatened by uncertain or unknown situations. This is expressed in a need for formality, predictability, and clear rules.
- A fifth dimension; Long-term Orientation (also named Confucian Dynamism), was added to the Hofstede's model in 1988 after being challenged by Bond (1988). Hofstede addressed this issue by undertaking a Chinese Value Survey (Hofstede & Bond, 1988).
- *Long-term orientation*: The extent to which people favour pragmatic, future-oriented perspective-fostering virtues like perseverance and thrift-over short-term thinking.

Although the Hofstede's cultural dimensions model has been criticised in the literature (Gernon & Wallace, 1995; Hofstede, 2002; McSweeney, 2002(a); McSweeney, 2002(b); Baskerville, 2003; Hofstede 2003), it is extensively used in accounting research. This extensive use in accounting research is because since 1980, Hofstede's cultural dimensions have been validated against other external measurements (Hoppe, 1990; Sondergaard, 1994; Barkema & Vermeulen, 1997; van Oudenhoven, 2001). Values are important as Zurlini *et al*. (2015:2) reason that as values are beliefs, individually or socially, about what is valuable and important in life and function as important guiding principles that influences behaviour and perceptions across a variety of situations. Gray

(1988) introduced Hofstede's cultural dimensions into accounting by linking it to Gray's (1988) accounting values.

2.5.1.2 Gray's accounting values model

Gray (1988) developed the model by matching and linking the four key dimensions; power distance, individualism, masculinity and uncertainty avoidance, with fundamental accounting values. This has led to the identification of four key accounting values by Gray (1988).

- *Professionalism versus statutory control*: A preference for the exercise of individual professional judgement and the maintenance of professional self-regulation as opposed to compliance with prescriptive legal requirements and statutory control.
- *Uniformity versus flexibility:* A preference for the enforcement of uniform accounting practices between companies and for the consistent use of such practices over time as opposed to flexibility in accordance with the perceived circumstances of individual companies.
- *Conservatism versus optimism:* A preference for a cautious approach to measurement so as to cope with the uncertainty of future events as opposed to a more optimistic, laissez-faire, risk-taking approach.
- *Secrecy versus transparency*: A preference for confidentiality and the restriction of disclosure of information about the business only to those who are closely involved with its management and financing as opposed to a more transparent, open, and publicly accountable approach.

Following Gray's (1988) proposition, a number of empirical research papers (Belkaoui, 1989; Perera, 1989; Perera & Mathews, 1990; Chow, Chau, & Gray, 1995; Hussein, 1996; MacArthur, 1996; Roberts & Salter, 1999) attempted to find empirical evidence on this topic, strengthening and enhancing the "Hofstede–Gray" framework. In an attempt to determine how culture influence values, Schwartz (1994) gathered data during 1988–1992 from 86 samples drawn from 41 cultural groups in 38 nations. From this research Schwartz developed the Schwartz's cultural dimensions of values model in 1994.

2.5.1.3 Schwartz's cultural dimensions of values model

The model divided national cultures into seven value types. Schwartz condensed these seven culture-level value types into two broad dimensions; 1] autonomy versus

conservatism and 2] egalitarian commitment and harmony versus hierarchy and mastery. The seven culture-level value types include:

- *Conservatism:* Emphasis on the status quo, propriety, and restraint of actions or inclinations that may disrupt the solidary group or the traditional order.
- *Autonomy:* Emphasis on the person viewed as an autonomous entity entitled to pursue own individual interests and desires, which can be divided into two sub dimensions:
  - *Intellectual autonomy:* Emphasis on self-direction and flexibility of thoughts.
  - *Autonomy:* Emphasis on stimulation and hedonism.
- *Hierarchy:* Emphasis on the legitimacy of the hierarchical role and resource allocation.
- *Mastery*: Emphasis on active mastery of the social environment through self-assertion. Promoting active efforts to modify one's surroundings and get ahead of other people.
- *Egalitarian commitment*: Emphasis on transcendence of selfish interests, voluntary commitment to promote the welfare of other people.
- *Harmony:* Emphasis on fitting harmoniously into the environment; protecting the environment, unity with nature, world of beauty.

The Schwartz's cultural dimensions of values model has been used successfully in accounting research (Chui, Lloyd, & Kwok, 2002; Hope, 2003) complementing the Hofstede model. From the three models it is evident that culture is part of life and it will influence how society value, react and interact towards different issues or disciplines and professions. Accounting is a highly regulated profession, therefore, adhering to IAS are of the utmost importance. In the IASB's effort to establish a single set of accounting standards, cultural influence plays an important role.

Culture is being influenced by values and these influence accounting standards in accepting, implementing and adhering to it. Ding, Jeanjean and Stolowy (2005:332-334) describe how cultural issues influence accounting. Perera (1989) developed a useful explanation of cultural factors, influence on accounting practices with specific reference to developing countries. Schutte and Buys (2011:19) demonstrate that inconsistent accounting practices "*are often attributable to environmental factors of which cultural differences appear to be the most significant*". Sawani (2013:3), however, noted that

legal and political factors provide more a substantial influence on accounting standard development and implementation than cultural values.

2.5.2 Political influences

If cultural values influence accounting standards the next question that comes to mind is then whether there are any political influences on these standards. Sawani (2013:1) argues that political systems are one of the factors that influence the development and authoritative implementation of IAS.

Political interference has been widely studied since the creation of the FASB in 1973. Research provides detailed evidence of political pressures in the due process (Sunder 1988; Baron & Ferejohn, 1989; Zeff 2002; Bushee & Leuz 2005; Farber, Johnson & Petroni, 2007). Political history and events also present some important realities about the process of standard-setting (Bertomeu & Cheynel, 2013:791). Evidence of this is found in the public disclosure of information issues resulting in the Private Securities Litigation Reform Act of 1995, the Sarbanes-Oxley Act of 2002, Dodd-Frank of 2010 in the USA and in South Africa the acceptance of the King III report on corporate governance and the promulgation of the Companies Act in 2008. The stability and extent of freedom within the political environment influences the accounting doctrine (Sawani, 2013:4). In other words, the level of freedom and civil liberty in a country has a direct influence on the extent of financial information disclosure and adhering to IAS. Nations have different economic systems; capitalistic, capitalist-statistic, capitalist-socialistic or socialistic.

These different economic systems also influence countries' accounting systems. Sawani (2013:4) fully support the seminal findings of Gastil (1978) that comprehensive accounting systems are present in countries with the greatest extent of economic development. The mixed South African economic system consists of a combination of a capitalistic and socialistic system. In a broad sense, the South African economic system follows; accounting and financial principles that are predominantly developed in a capitalistic economic system (Flynn, 2003:13). While the masses are being told by the governing party and its alliances that, all should share equally in the fruits of the economy, socialistic economic system.

Central government organise economic activity by planning economic activity and employment. Surely Broad-Based Black Economic Empowerment (BBEE) and

Employment Equity (EE) programmes are ways in which government organise economic activities within South Africa. Flynn (2003:6) remarks that proponents to this system claim that fair distribution of production output and equal remuneration for labour are crucial values. Considering that the principles of accounting and finance in South Africa rest heavily on the assumption of free competition, it is therefore deemed to be a free market economic system (Flynn, 2003:7) where minimum government intervention must be present.

However, this is not the case in South Africa where government's hand of intervention; or maybe a better word interference; is evident at all levels of society. When this is considered realistically, the South African economic system is being funded by a capitalistic economic system and being administrated as a socialistic economic system, with much government interference. Willemse (2013:10) write that in some circumstances South Africa is highly competitive when compared to other countries, but when it comes to labour there are concerns. The labour market is a huge burden to the economy when measured to international standards, placing South Africa's labour market efficiency in the 113th position out of 144 countries. Slabbert (2013:4) is of the opinion that political forces are destabilising labour relations.

The National Development Plan (NDP) aims to eliminate poverty and reduce inequality by 2030. In accordance with the plan, South Africa can only realise these goals by drawing on the energies of its people, growing an inclusive economy, building capabilities, enhancing the capacity of the state, and promoting leadership and partnerships throughout society (South African Government, 2013). There are many scholarly arguments pertaining to the benefits of implementing IAS and it is increasing in importance. However there are still many challenges in the development and authoritative implementation in developing economies, including South Africa. South-Africanisation of accounting standards will influence disclosure and would ensure that information that is reviewed by decision-makers concerning the allocation of resources and assessment of performance and risk are being actively communicated to stakeholders. In doing this, the Integrated Reporting Committee (IRC) (2011), King IV and Institute of Directors' (IOD) (2016) requirement, of more comprehensive and transparent reporting would also be met, also enhancing decision-making of all stakeholders. The next section focusses on the implementation of IAS with specific

reference to the standards that could potentially influence an integrated financial decision-making model.

2.6 Implementation of international accounting standards

The objective of IAS1 is to ordain the basis of the presentation of financial statements by guaranteeing comparability within the company as well as with other companies. Comparability within the company means that the financial statements of the company of previous periods are consistent. While the comparability with other companies make it possible for the stakeholders to make informed decision on these financial statements. It was previously noted (Section 2.3.2, page 24) that one of the objectives of the IASB is to develop a single set of international accounting standards. Challenges with the implementation of these standards have also been widely studied as accounting standards differ from country to country. Christensen *et al*. (2008:25) state that a country's orientation towards internal or external financing is important to understand its financial reporting system, a view supported by Joshi and Al-Mudhahki (2013:45). Accounting standards are developed to satisfy the needs of the main stakeholders in the economy. Therefore, it can be concluded that the usefulness of accounting could be very different to internal as opposed to external stakeholders. A country's orientation towards internal or external financing will also influence the accounting standards.

In countries with an internal orientation, information asymmetries between managers and capital providers are resolved through private information channels. Public information channels such as the annual report may serve other purposes, such as, determination of dividends or taxes. This argument can be applied to company level where some companies may demonstrate a higher degree of external orientation than others. The orientation could be driven by a trade-off between the costs to internal stakeholders of losing the information advantage and the benefits from being able to exploit growth.

Many countries are replacing their national standards with IAS for some or all domestic companies. Other countries have adopted a policy of reviewing IAS and adoption either verbatim or with minor modification as national standards. Eliminating many international differences in accounting standards, and standardising reporting formats, many advantages can be derived at. International accounting standards eliminate many of the adjustments that stakeholders historically have, enhancing international

comparability (Joshi & Al-Mudhahki, 2013:46). Comparability of the companies' financial information will lead to useful information for decision-making purposes.

2.7 Summary

The chapter reviewed the development, harmonisation, quality, influences and implementation of IAS. Although significant benefits to the implementation of IAS are evident many challenges in the development and authoritative implementation prevails. Furthermore, it can be said that while the benefits of convergence of accounting standards are many, a complete theory of IAS should consider economy, cultural and political influences.

Accounting is unique in its drive towards global coordination of standard-setting, no other public policy is regulated at this level, not even policies on international trade, foreign aid, bank regulations, and environmental issues. Not even centralised regulation of capital markets will provide any recourse to avoid regulations that some companies may view as undesirable except through a collective bargaining process.

Interventions by elected politicians that focus on the encouragement of regulations of the most popular proposals are implemented. By taking value away from companies that have unfavourable information to disclose, or removing managerial discretion, proposals for more disclosure are comparatively unpopular and, therefore, the most popular politicians tend to oppose increasing disclosure requirements, even if such disclosure requirements were to increase investment efficiency. The connection between accounting standards and the underlying economic environment in which they take place have been pointed out. The South African diverse cultural, economic, legal and political situation is a good example of this.

However, this uniqueness is not just a South African issue, many countries have similar and even more difficult challenges. Accounting professionals should accept these challenges and become business partners, providing relevant information for decision-making to all stakeholders. By examining the environment, applying adjustments to accounting data before analysing it, accounting professionals will be able to supply quality integrated financial reports to the users of the financial information. These financial reports will then be the basis for an integrated decision-making model to all stakeholders.

In summary, it can be stated that the challenge with IAS is that it does not allow for a fair reflection of the underlying economic, legal and political framework of the country in which it is implemented. This could impose on the decision-making of stakeholders. The next chapter focusses on analysing the decision-usefulness objective of accounting. Since all stakeholders rely on accounting information for decision-making purposes, an in-depth understanding of the improvement of the decision-usefulness objective of financial accounting and integrated reporting by implementing lean accounting principles needs to be considered.

CHAPTER 3

STAKEHOLDERS' FINANCIAL DECISION-MAKING PRINCIPLES AND MODELS IN PERSPECTIVE

"The future depends on what we do in the present" - Mahatma Gandhi

3.1 Introduction

In Chapter 1 (Section 1.1, page 1) it was noted that all stakeholders, financial and non-financial users (Schoonraad *et al*., 2005:273) use financial reports for decision-making purposes. The accounting profession deals with the recording and reporting of financial information of a business. This information is made available to the users and stakeholders of the business. The different stakeholders will use the relevant information to make optimum decisions to achieve predetermined objectives. Arnold and Hope (1990:4) contend that in all forms of society, individuals make economic decisions that entail the exchange of property at agreed prices, which relates to predetermined units of measurement or medium of exchange.

The use of a common unit of measurement forms a fundamental role in economic, legal, political and sociological analyses. Accounting responds to the need for quantitative, financial information in order to supply the continuous need to value and measure objects. With the development of international trade the accounting profession adjusted the reporting and disclosure standards, with its aim to develop a standard set of financial reports that is universal, allowing the stakeholders to make decisions in dealing with cross-border trade. With the development of the international standards the importance of accounting to supply the stakeholders with useful information, which is valuable for decision-making, has become evident.

Arnold and Hope (1990:5) state the philosophy of accounting is to provide information that aid good decision-making. Accounting is a system for primarily providing financial information to those making decisions and controlling the implementation of those decisions. However, information will depend on who is making the decision and for what purpose.

One of the most important and striking features that has gained prominence in accounting research is the so-called decision-usefulness theory of accounting.

While the previous chapter dealt with accounting standards, convergence, harmonisation, implementation, and acceptance, this chapter explores the decision-usefulness objective of accounting information to supply stakeholders with quality and reliable accounting information for decision-making purposes. The three variables that are explored in this chapter are decision-making purpose, accounting information, indicators that influence financial decision-making. Firstly, the chapter will consider the decision-making purpose and information requirements of the various stakeholders before reflecting on the underpinnings of general purpose accounting reports.

Furthermore, the chapter will determine the characteristics, provide evidence of accounting measurement concepts and show how users rely on decision-useful accounting information in order to create change and value. The influence of traditional accounting-based and the modern value-based financial performance measures together with other financial indicators on the decision-making of the stakeholders are investigated. Finally, the chapter considers improvements that could be done to financial decision-makings models. Chapter 3 concludes with a summary of the findings leading to the achievement of the fourth and fifth secondary research objectives (Section 1.4.2, page 6).

3.2 The purpose of decision-making and information requirements of the stakeholders

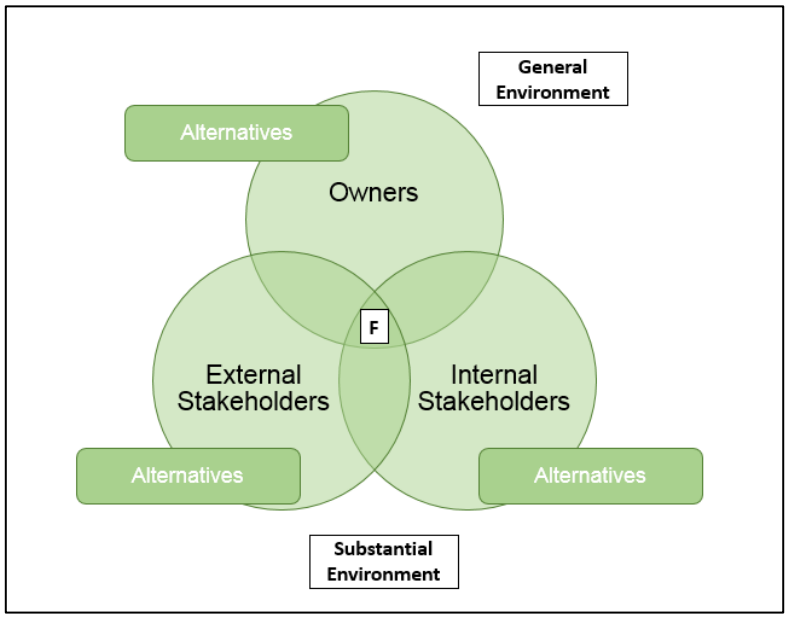
As noted in Chapter 1 (Section 1.1, page 1) decision-making that rely on quality integrated financial reports consisting of financial and non-financial information is of the utmost importance. Sound decision-making is even more important in times of financial crises; as the global financial situation is currently in much turmoil. South Africa is heading towards a recession, with its credit rating down graded to junk status by Standard and Poor (Gernon and Mabuza, 2017); the importance of decision-making cannot be under estimated. Decision-making is an action whereby a person make a choice or judgement or reach or give a resolution or after careful consideration of all the relevant facts; information used as evidence (Oxford, 2006:267). The Oxford dictionary calls it an action of thinking about something carefully before making a judgement or choice (Oxford, 2006:189). However, the Collins dictionary assesses it the act of making

up one's mind after considering something (Collins, 1986:221). Decision-making depends on available information and its purpose and is influenced by the environment (Arnold and Hope, 1990:5).

Therefore it can be argued that decision-making is not self-contained or isolated to it, but is influenced by the many factors and stakeholders in its operating sphere. This influential factors and stakeholders can be referred to as constraints, which simply mean the things that could limit restrict or influence decision-making. The environment will be influenced by available technology and the decision maker's ability to transform with it. Furthermore, the environment provides alternative opportunities for stakeholders and according to Arnold and Hope (1990:5), it is likely to be dynamic. Dynamic, contrast to static, is a force (Oxford, 2006:232) full of energy, new ideas and constantly changing. Considering the technological revolution and the availability to alternative technologies and opportunities one cannot argue that decision-making is not being influenced by stakeholders and the environment.

Three main stakeholders groups were identified that need to make decisions, namely owners, internal- and external stakeholders. The stakeholder group, owners consist of the investors of the company, current as well as potential, and would represent the shareholders of the company. Internal stakeholders of the company would be the managers and employees of the company while the external shareholders represent suppliers of funds, and goods or services. Furthermore, the company's customers have definitively had an influence on the decision-making environment in which the company operates. Government and the general public are also two influential parties. The environment can be divided into a substantial- and general environment. Each will have a different level of influence on the decision-making process. The substantial environment consists of the factors that will have an important and meaningful influence on the company's decision, while the general environment will influence all companies in the economy. Each of the stakeholder groups are individually influenced by different alternatives from its own sphere. Different stakeholders also interact with one another separately and collectively. Figure 3-1 indicates how decision-making will be influenced by stakeholders and the environment, in which it must be done.

Figure 3-1: Decision-making will be influenced by stakeholders and the environment



Source: Own research

From Figure 3-1 it is clear that the environment in which a company operates and decision-making takes place consists of three main stakeholders groups, namely owners, internal and external. The environment is divided into a substantial- and general environment. Each of the stakeholder groups are individually influenced by different alternatives from its own sphere, which is indicated by the dark area only overlapping the stakeholder. The dark area between two stakeholders represents interaction between one another separately. The collective influence between all stakeholders and interaction of stakeholders with one another is indicated by ***point–F,*** where the spheres cross each other. The area in the middle where all stakeholders overlap is known as the feasibility point. This feasibility point, is very unstable and is influenced by a variety of factors, some controllable and some uncontrollable. Although controllable and uncontrollable factors influence decision-making, all decisions are made within the basic decision-making framework.

Decision-making is a process which consists of seven steps, namely identifying goals, collecting and analysing data, choose decision rules, rank alternatives, make decision and predict outcome, report the actual outcome of the decision, and monitor the actual outcome to ensure action is under control. The American Accounting Association (AAA) (AAA, 1986:1) defines accounting as "*a process for identifying, measuring and*

communicating economic information to permit informed judgements and decisions by users of the information." It can therefore be argued that accounting is important in decision-making.

However, not all information is of value, in a world bombarded by information it is important to make a distinction between data; facts of any kind (Oxford, 2006:185; Collins 1986:216) and information. Not all information is valuable for decision-making. Arnold and Hope (1990:19) conclude that accounting is primarily concerned with providing valuable information, otherwise it is a rather sterile area of study and research.

The value of information depends on the impact on future decisions. As value is personal to the decision maker, the user of the information (Arnold & Hope, 1990:20), its value also dependent on whom the user is and what is the purpose of the information. In order to determine the value of information, the difference between the net benefit (value) expected from the revised decision and the net benefit (value) from the original decision must be compared, in relation to the extra information obtain. The net benefit is calculated by comparing the benefit of having the extra information with the cost to supply the information. Arnold and Hope (1990:20) explain that information is only valuable if the decision maker's best action with the new information is different from the best action without the information.

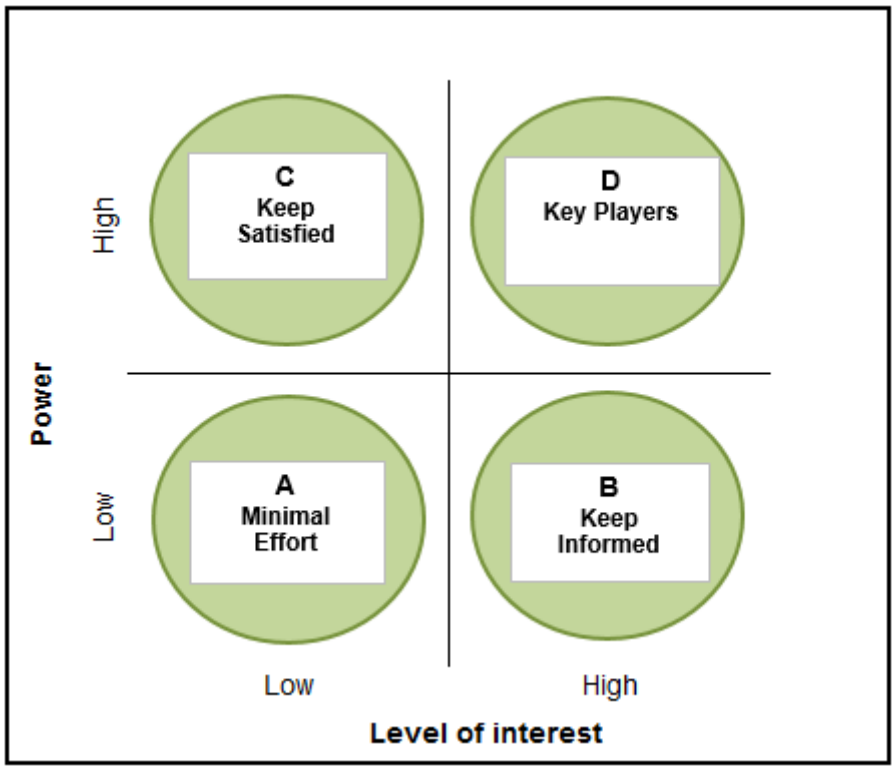
Different stakeholders have different decision-making requirements, therefore, requiring different information from accounting reports. A key aspect to understand different information requirements is to determine how the company will be influenced by different stakeholders. Literature suggests that using the Mendelow's matrix is a popular method to perform stakeholder mapping.

Stakeholder mapping deal with the stakeholders' conflicting demands and help identifying stakeholders' expectations, power and establishing political priorities. The process involves making decisions on the following two issues.

- How **interested** the stakeholder is to impress expectations on the companies' decisions, in other words how likely is the stakeholder to exercise power?
- To what extent the stakeholder has **power** to impose its wants?

Mendelow (1991) proposes a matrix to help analyse stakeholders impact on a particular decision, assessing whether stakeholder resistance is likely to inhibit the success of the decision. Furthermore, the matrix also assess what policies may ease the acceptance of the decision. In Figure 3-2 the Mendelow's matrix is graphical explained.

Figure 3-2: The Mendelow's matrix



Source: Own research

From Figure 3-2 it can be seen that stakeholders' power is compared to the level of interest. The *level of interest* can be described as how likely it is that a stakeholder will take some sort of action to exercise power. However it must be stated that not all stakeholders have the time or aspiration to follow management's decisions closely. The level of interest could increase or decrease by; high personal financial investment; absence of alternatives, customers, suppliers and employers; failure to adhere to governing bodies or regulators prescriptions; or social influence of the company. Potential power that could be used by stakeholders could include but is not limited to, resignation, withdrawing labour, cancelling orders, refusing to sell, calling in an overdraft, dismissing directors, legal action, granting contracts, setting remuneration. It must, however, be said that legislation tends to move power away from shareholders to other stakeholders. Examples of this are found in employee protection legislation

(dismissal, redundancy, health and safety) that moves power to employees and away from management and shareholders. Environmental protection legislation moves power to the local community and other interested parties while consumer legislation moves power to customers.

From Figure 3-2 four quadrants are visible. ***Box A – Minimum effort:*** The lack of interest and power makes stakeholders in this quadrant open to influence, accepting more likely than others what they are told and to follow instructions. ***Box B – Keep informed:*** Stakeholders are interested in the decision, however, lacking the power to do anything about it. Management needs to convince opponents to the decision that it is justified; otherwise these stakeholders will try to gain power by joining with parties in Boxes C and D. ***Box C – Keep satisfied:*** These stakeholders need to be kept satisfied to avoid them gaining interest and moving to Box D. This could involve reassuring these shareholders of the outcomes of the decision well in advance. ***Box D – Key players / participation:*** These stakeholders are the major drivers of change and could stop management plans if not satisfied. Management, therefore, needs to communicate plans and discuss implementation issues. Communication is very important in any relationship, whether personal or professional and remains the heart of an accounting information system (AIS).

The successful communication of valuable information from the stakeholder that possesses the information to the other stakeholders that does not have it, will influence decision-making of the other stakeholders. Communication is very important and will potentially influence decisions both positive and negative. Previously it was deduced that valuable information will result in a different decision being made in the same scenario (Section 3.2, page 43). It is important to highlight the value of information in terms of decision-making as it can be influenced by stakeholders' motives and requirements. Table 3-1 indicates the different stakeholders' decision-making purpose and information requirements.

Table 3-1: Information requirements of stakeholders for decision-making purposes

Stakeholders	Decision-making purpose	Information requirements
Investors (Shareholders/owners)	Buying, selling or keeping shares.	Shareholders require information to aid in making investment decisions, therefore risk and returns will impact the shareholders. Dividends is the remuneration for investment and information on dividend cover, dividend yield, earnings yield, PE ratio and EVA are priority.
Financiers (Bankers/creditors)	Increase, decrease or keeping to current level of credit or loans.	Financiers will consider finance if the risk is acceptable. Information requirements will include affordability and gearing ratios.
Managers	Determine the level at which to conduct operations.	Information requirements for managers will include profit ratios, share price, liquidity and management ratios in order to consider performance of the company.
Employees	Wage negotiations and change of employment conditions.	Information requirements are being influenced by concerns about job security and future prospective, and include mainly profitability and liquidity ratios.
Customers	Quality of product or service acceptable to buy it.	Customers require information about the company's sustainability. Furthermore, information about how the company can provide cost efficient solutions.
Government	Increase in taxation, what is the impact on the environment.	Interest in a company's annual financial statements, integrated reports on community involvement, BBEE and EE reports.
General public	Assessing the economic and social impact.	Regulatory Authorities Information about the company's adherence to environmental rules and regulations.

Source: Own research

From Table 3-1 it is clear that the requirements of different stakeholders are different for decision-making. The variety of decision-making does not require the same information; it is this differentiating information requirement that is the challenge for the provider of accounting information. Accountants need to provide useful information to satisfy the need for valued information to all stakeholders. Using accounting standards to provide accounting reports (annual financial statements) accountants help the stakeholders in the decision-making process. Arnold and Hope (1990:22) identify the conflicting needs of stakeholders using accounting information. Accounting, reports the company's performance to stakeholders, and its effectiveness depend~~ent~~ on suitable communication. A limitation of accounting is that measurement is confined to a monetary unit of measure. Measurement is to ascertain the extent or quantity of a thing by comparison with a fixed unit or object of known size (Oxford, 2006:467). Measurement based on other values, play little or no role in decision-making based only on accounting information. Laughlin (2012:45-46) predicts the increase in accountability that comes from the contents of general purpose accounting reports (GPARs) that is constructed on an accrual, as distinct from cash basis, has been well-documented, however, claiming the decision usefulness of the information from GPARs are underdeveloped. The theoretical underpinnings of general purpose accounting reports, are discussed next (Section 3.3, page 50).

3.3 Reflections on theoretical underpinnings of general purpose accounting reports (GPARs)

The complex and evolving nature of the modern business environment requires from the accounting profession to provide some stability. The accounting profession provides stability in a highly liquid environment by providing shareholders with useful information that is perceived to be valuable for decision-making. The perceived value encompasses the decision-usefulness objective of accounting reports. The Trueblood Report (Report) paved the way of the development of the decision-usefulness objective of accounting. Cyert and Ijiri (1974:38) subject that the report's objectives are; 1] to provide information useful for making economic decisions, 2] to provide information useful to stakeholders for predicting, comparing, and evaluating potential cash flows, and 3] to supply information useful to judge management's ability to utilise the company's resources effectively to achieve the primary goal of the company.

Traditionally the role of accounting is based on the agency theory in terms of stewardship (Puxty 1990:350; Lehman, 1992:18). The accountant's role of stewardship was someone that looked after someone else's property. The emphasis of the traditional role changes from stewardship to decision usefulness in 1970 (Puxty 1990:350), however, Gouws (1997:66) proposes that the decision-usefulness objective did not replaced the stewardship objective, but instead enhanced it. Gouws and Lucouw (1999:101); Wolk, Tearny and Dodd (2001:170) and Schoonraad *et al*. (2005:280) all agree that the accounting literature spend a lot of emphasis on the decision-usefulness objective. Accounting systems must be able to supply all stakeholders, internal as well as external, with information that will be helpful in decision-making (Laughlin & Lowe, 1990:18; Glautier & Underdown, 1997:11; Gouws, 1997:63; Cox, 2003:303; and Schoonraad *et al*., 2005:280;). Stakeholders need to evaluate information in order to make an investment, financing or dividend (Imam, 2000:133) decision.

These decisions must be made in a dynamic environment, where there are a lot of variables that constantly change. Schoonraad *et al*. (2005:280) assess the objective of accounting as information system is the ability to provide information to all stakeholders to make optimal decisions about the allotment of scarce resources (Tinker 1985:xx; Belkaoui & Jones 1996:29; Glautier & Underdown 1997:16; Lehman 1992:21). Cox (2003:304) argues that diversity of stakeholders and their decisions presents a notable challenge to accounting. In the literature it became evident that there are two different views namely multiple sets of accounting information that provide for specific stakeholders requirements. Secondly one set of accounting information as decisions of stakeholders are similar and the information requirements are homogeneous. Wolk *et al*. (2001:191) argues that this homogeneous assumption has not yet been empirical proven, no evidence of this was also found in this study. Therefore, it may be concluded that although there exists a feasibility point as suggested by Figure 3-1 on page 45, some adjustment to the financial reported information needs to be made for decision-making purposes.

The traditional role of an accountant has changed; Chapter 2 (Section 2.3.2, page 24) highlighted the role of the accountant as a business partner who provides relevant information for decision-making. The changing role encompasses the expansion into other disciplines (Schoonraad *et al*., 2005:273) to play a more integrated role in companies and society (Bedford & Shenkir, 1987:90). IFAC (1996:5) proposes that

"*accountants are expected to be entrepreneurs, financial analysts, sales persons, good communicators, negotiators, public relations specialists and managers*". While Favaro (2001:4-5) predicts that chief financial officers (CFO) are expected to partake in the four crucial business areas: strategic planning, information management, investor relations and company leadership. Professional accounting bodies also insists that the members must be educated in pervasive skills (AECC 1990; IFAC 1996; SAICA Competency Framework, 2014. It can therefore be deduced that professional accounting bodies such as the IFAC, AAA, and SAICA recognise the importance of communication in the practice of accounting. Schoonraad *et al*. (2005:274) suggest that financial communication should be managed and organised in an inclusive and integrated manner and bear all stakeholders in mind. The stakeholders rely on accounting as an information system (Gouws & Lucouw, 1999:101) to communicate, which many researchers consider a one-way process, and supply the information on which the financial performance of a company can be evaluated in order to make decisions.

3.4 Current financial models used by stakeholders in decision-making

3.4.1 Introduction to current financial decision-making models

Current financial decision-making models rely on financial ratios. Using financial ratios in decision-making models have been extensively researched with some of these studies dating back to the early 1900s, and Wall (1919) is deemed to be the pioneering study. Financial ratios are being used as an analysis tool (Cassim, 2014:16), however, Gouws and Lucouw (1999:102) warned that these ratios are not exact and must be viewed holistically. Therefore stakeholders consider financial performance measures, risk indicators and growth indicators as useful in financial decision-making. These are discussed next.

3.4.2 Financial performance models that help stakeholders with decision-making

In today's highly competitive economy, evaluating the financial performance of companies is of great significance to all stakeholders. These stakeholders' include employees, managers, suppliers, current- or potential investors as well as competitors. Using financial performance of companies to assist in decision-making is being conducted in relation to financial analyses. As with many things in life, financial performance has different significance or meaning to different stakeholders. The

different meanings could include but is not limited to; return productivity, output and economic growth. The use of financial ratios in the performance evaluation process is pertinent for all stakeholders of the company and related industries. Data obtained in reports from the AIS; statements of: comprehensive financial performance, financial position, cash flow and other integrated reports; are considered as pivotal measurement tools for performance evaluation.

Financial ratios are beneficial (Chen & Shimerda, 1981:51) providing meaningful information for decision-making (Singh & Schmidgall, 2002:206) and is significant (Yalcin, Bayrakdaroglu, & Kahraman, 2012:350) for evaluation. However, Lucouw (2013:70) argues that financial ratio analysis is useful to compare performance, it only provides numerical data while ignoring all other data that could potentially influence decision-making, leading too Lucouw's (2013:70) conclusion that *"it cannot form the basis for decision-making"*. Traditionally performance evaluation relied on financial indicators that relates to profitability.

3.4.2.1 Traditional accounting-based financial performance (AFP) measures

Yalcin *et al*. (2012:350) discuss how traditionally accounting-based financial performance (AFP) measures have been used to evaluate the company's financial situation and performance. Gallizo and Salvador (2003:278) conclude that AFP measures provide useful quantitative financial information to all stakeholders who evaluate the operation of a company and analyse its position within an industry over time. AFP measures can be classified as liquidity ratios, financial leverage ratios, profitability ratios, activity ratios, and growth ratios with respect to the information provided for decision-making. Four traditional measures of the AFP will be used to evaluate the three case study companies, in order to determine how stakeholders' decision-making will be influenced in Chapter 7 (Section 7.2.2.1, page 204).

Table 3-2 that follows illustrates four AFP measures that stakeholders use in decision-making. The four AFP measures most commonly identified by the literature are; return on assets (ROA), return on equity (ROE), earnings per share (EPS) and price/earnings ratio (P/E).

Due to the relationship between profit and assets the calculation of ROA, a higher return means an improved profit performance for a company, however, in an attempt to maximise the wealth of its shareholders a company should be trying to maximise the

ROE ratio. Els, Erasmus and Viviers (2014:76) explain that the total equity includes the ordinary shareholders' equity; preferences share capital and the non-controlling interest. Because only the shareholder's equity appears in the denominator, the measure is directly influenced by the amount of debt that a company uses to finance assets. Comparing the EPS to previous years is a good indicator to determine whether a company is growing or not. However, an investor should consider other important measurement factors before making an investment decision; the P/E ratio is the most popular performance analysis measure.

Table 3-2 lists four performance measures that are commonly used together with an explanation of each. This is followed by the purpose of the performance measure in the stakeholders' decision-making process.

Table 3-2: Traditional accounting-based financial performance measures

Performance measure	Explaining the performance measure	Purpose of the performance measure	Sources
Return on assets (ROA)	ROA relates to a company's after tax net income during a specific year to the company's average total assets during the same year. ROA, measures the company's profitability, which is expressed as a percentage.	• Determine how effective a company used the total assets at its disposal to generate earnings. • The ROA shows the stakeholders how much profit a company is able to generate for each Rand invested in assets. • Gives an idea how efficient the management uses its assets to generate earnings. • ROA is a convenient way to compare a company's performance with that of its competitors.	Altman (2002:11); Vigario (2008:236); Correia, Flynn, Uliana, Wormald & Dillon (2015:5.23).
Return on equity (ROE)	It measures the percentage of profit earned on ordinary stockholders' investment in the companies. Because ROE is useful to compare the profitability of a company to that of other companies in the same industry, it is an important and widely used financial ratio by stakeholders.	• Desire to measure the return that shareholders expect from shares in the company.	Altman (2002:11); Livingstone and Grossman (2002:143); Fouche and Barnard (2013:686).

Table 3-2: Traditional accounting-based financial performance measures (continued)

Performance measure	Explaining the performance measure	Purpose of the performance measure	Sources
Earnings per share (EPS)	It calculates the company's profitability by dividing the company's net income available to shareholders by the number of shares outstanding during the same period (if the number of shares out in the market has changed during that period such as a share buyback, a weighted average of the quantity of shares is used).	• Most widely used ratio. • Measure a company's strength. • Considered to be the most important variable to determine a share's price. • It is also a major component used to calculate the price-to-earnings valuation ratio. • Allowing the comparison between different companies' ability to "make money".	Chen, Kim, and Chen, 2007:462); Jordan, Clark, and Smith, 2007:343-347).
Price earnings ratio (P/E)	Indicates how much investors are willing to pay per Rand of the current earnings if the current market price per share is divided by the EPS.	• Determine what the market is willing to pay for the company's earnings and how long it will take for the investor to recover the investment in shares. • P/E ratio is the most popular measure for performance analysis for investors to consider.	Kumar and Warne (2009:69); Truong (2009:1-7); Fouche and Barnard (2013:700).

Source: Own research

Globalisation increase international trade and capital mobility, leading to the eminent change in the business environment. This change lead to a more competitive business environment, highlighting the importance of the efficient usage of scares resources within companies and activities aimed to appreciate the company values have also gained importance (Yalcin *et al*., 2012:350). Furthermore, Yalcin *et al*. (2012:350) argue that these changes led to the improvement of financial performance measurement tools.

3.4.2.2 Modern value-based financial performance (VFP) measures

During the 1990s new instruments were developed to measure and analyse companies' financial performance. These new instruments are refered to in the literature as modern value-based financial performance (VFP) measures. Sandoval (2001:114) distinguishes VFP measures as the measures that use value creation as a determinant apposed to financial situation and performance.

Value creation captivates stakeholders of companies with regard to the information it provides for decision-making. Current or potential investors are directly interested in value creation as it is the payment expect in return of the capital invested and risks taken (Yalcin *et al*., 2012:351). The increase of a company's performance and new value creation also satisfy the internal stakeholders, managers, employees and external stakeholders, suppliers, customers, government and environmental pressure groups. The national economy is also being influenced by value creation. The influence on the national economy is being argued by Camelia and Vasile (2009:183). According to Camelia and Vasile (2009:183) this influence means the efficient usage of the national economic potential and the increase of gross domestic product that contributes to the increase of social welfare. Shil (2009:172) explains that financial performance measures develop from; profit maximisation, the old-age term, to wealth maximisation, the matured term, and recently to value maximisation, today's wisdom term.

VFP measures and analyse companies' value for decision-making purposes by the stakeholders. Management consulting firms have developed customised value-based measures based on what is perceived to be value creation. Table 3-3 (page 59) indicates some of the internationally used value-based measures that were developed by managing consulting firms that included; economic value adding (EVA), market value added (MVA), cash flow return on investment (CFROI) and cash value added (CVA). These four VFP measures are evaluated in Chapter 7 (Section 7.2.2.2, page 206) on

the three case study companies, to determine how stakeholders' decision-making will be influenced by the modern measures.

Table 3-3 shows the literature content of the four VFP measures and will briefly explain economic value added (EVA), market value added (MVA), cash flow return on investment (CFROI) and cash value added (CVA). Finally the purpose of EVA, MVA, CFROI and CVA and their decision-making abilities are summarised.

EVA was the first of the VFP that were developed and is viewed as an estimation of a company's true economic profit that differs from accounting profits (Lin and Zhilin, 2008:67). Yalcin *et al*. (2012:353) deduce that during the 1990s EVA became an increasingly popular tool to measure financial performance. Fouché and Barnard (2013:707) argue that currently financial performance measures place more emphasis on long-term and sustainable value than on short-term profitability. It can be concluded that a company's value only increase when the company generates returns that exceeds its cost of capital (Lee & Kim, 2009:440; Fouché & Barnard, 2013:707). If the EVA is positive, the company creates value for its owners. A negative EVA indicates a reduction in shareholders' wealth. De Wet and Hall (2004:48), however, predict that in theory, there is a direct connection between EVA and MVA. MVA is a closely related to the EVA as it is the present value of all expected future EVA and can be thought of as the net present value of the company (Fatemi, Desai, & Katz, 2003:169). A negative MVA, disclose the market sentiment that the company's capacity to create value and the invested capital is eroded. A positive value proves that the company is very attractive on the market, because it can reward its shareholders. It shows similarity to EVA as it also assumes that management creates value by earning returns on invested capital that are greater than the cost of capital.

CFROI often paints a truer picture of the financial performance of a company as it measures real cash return on the capital invested as a percentage. A high CFROI is an advantage to shareholders because the generated future growth requires lower investment. Martin and Petty (2000:23) proposed that CVA is an improvement of EVA because the model is based on cash flows, not earnings. Yalcin *et al*. (2012:353) discuss that CVA is used in value-based company management for strategic and operational financial planning in order to measure economic performance and control.

Table 3-3: Modern value-based financial performance measures

Performance measure	Explaining the performance measure	Purpose of the performance measure	Sources
Economic Value Added (EVA)	EVA measures the residual income, which focusses on the concept that a company must earn an adequate risk adjusted return on its investment in assets. This can be done by subtracting the company's cost of capital times total capital invested from its net operating profit after taxes (NOPAT)	• Analyse the value that the company created over a period of time. • Contemplate the companies' cost of capital by estimating performance measurement is intrinsic to EVA.	Yalcin *et al*. (2012:353); Fouché and Barnard (2013:707).
Market Value Added (MVA)	A cumulative measure of the value created by management in excess of the capital invested by shareholders. MVA reflects the cumulative wealth created for shareholders over the existence of the company beyond the capital invested.	• Measure shareholder's wealth maximisation taking the relative risk-based costs into account. • Capture the market's appraisal of how effectively a company's managers have utilised the scare resources and how good management has positioned the company.	Yook and McCabe, (2001:79); Fatemi, Desai, and Katz, (2003:172); Cheng, Tsao, Tsai, and Tu, (2007:53)

Table 3-3: Modern value-based financial performance measures (continued)

Performance measure	Explaining the performance measure	Purpose of the performance measure	Sources
Cash Flow Return on Investment (CFROI)	CFROI is the rate of return that makes the present value of a company's future cash flows, including a ''terminal value'' from the release of non-depreciating assets, equal to the company's gross cash investment.	• Indicates whether the company has earned returns that exceed its cost of capital, therefore, creating value for shareholders.	Yalcin *et al*. (2012:353)
Cash Value Added (CVA)	To calculate an economic profit that is even closer to cash flow than is the case with the adjusted EVA yet it still retains the EVA's advantage of accounting for all capital costs.	• CVA is measured as operating cash flows less economic depreciation less a capital charge on the total amount of cash invested in the company.	Martin and Petty (2000:45); Camelia and Vasile (2009:184); Yalcin *et al*. (2012:353)

Source: Own research

Cunningham and Harris (2005:37) agree that financial performance measures provide useful quantitative financial information that are an effective tool and that is helpful in the decision-making of all stakeholders. However, Montesinos *et al*. (2013:171) discuss whether the establishment of financial performance measurement system improved decision-making while Boyne, Gloud-Williams, Law and Walker (2002:691) and Taylor (2009:853) regard this as a topic for much debate. Montesinos *et al*. (2013:174) conclude that the theoretical literature recognises the role of performance measurement and reporting, empirical evidence warns of the difficulties of using performance indicators in practice. De Lancer and Holzer (2001:697); Pollitt and Bouckaert (2004:128); Verbeeten (2008:142) predict that there is a gap between the intended and real changes that take place with the introduction of performance measurement systems.

Montesinos *et al*. (2013:176) argue the necessity to improve the quality of performance information in order to be useful to imptobr the quality of decision-making. Ball (2012:39) proposes the economic crisis, with many local governments near to bankruptcy, may emphasise the seriousness of inadequate financial reporting, financial management and decision-making. Montesinos *et al*. (2013:171) deduce some reasons for the poor use of financial performance measures by stakeholders is; difficulties to obtain performance information, especially where there is an absence of a cost accounting system and the possibility of producing performance information only to comply with accounting standards and not to use properly it. However, is not just financial performance measures that influence decision-making of stakeholders, risk and growth also need to be analysed.

3.4.3 Useful financial risk indicators for decision-making

Information about historical events is of little value for future decisions; "*data about the future are commonly the weakest points in our armour of fact*" (Simon 1982:170). The information should be adopted and quantified with realistic estimates. Realistic estimates will be based on futures expectations and should consider financial and non-financial information. Therefore, a realistic estimate should follow a holistic approach to consider internal as well as external factors. Correia *et al*. (2015:3-2) propose the unlikely replication of the past in the future. Therefore, it would not be of value to use past financial statements and make decision on its face value.

Decision-making involve risk, because of the unknown, and risk in financial decisions are expressed in terms of return (Correia *et al*., 2015:3-2; Fouche & Barnard, 2013:134). There is a popular saying "*the higher the risk, the higher the expected return*". But it is also true that the higher the risk, the higher the chance of failure. Correia *et al*. (2015:3-2) point out that risk can be measured by comparing the risk of a company with a similar company, the industry and ultimately the market as a whole. Risk can be defined as a potential hazard or possibility of loss (Correia *et al*., 2015:3-3); possibility of incurring misfortune (Collins, 1986:737); dangerous situation or a situation that have a bad outcome (Oxford, 2005:650).

Considering the before-mentioned, it can be deduced that risk is an unpleasant experience resulting from an action that will result in the loss of something. Koen, Oberholster and Van der Laan (1994:13) predict that risk indicates the influence of change on the capital and income components of a company. The influence of change on capital and income components of a company is measured by the sensitivity of capital and income.

The financial strength of the company that indicates the company's ability to fulfil obligations is known as sensitivity of capital. These obligations are divided into long-term and short-term obligations. Sensitivity of income indicates a company's ability to withstand changes in income in terms of its commitments. Table 3-4 on the next page summarises how stakeholders use financial risk indicators to make financial decisions. By exploring the risk indicators, the stakeholders' financial decision-making are influenced within different risk indicator groups. These groups are presented by stating some of the indicators that stakeholders apply in financial decision-making.

Table 3-4: Financial risk indicators used in stakeholders' decision-making

Risk indicator	Indicating the risk indicator group	Indicator measurement
Sensitivity of capital	**Solvability –** measures the financing structure or the so-called capital structure of a company.	• Total shareholders' interest to Total assets (TSITA) • Total assets to Total liabilities (TATL) • Equity to total shareholders' interest (ETSI) • Debt/Equity ratio (D/E) • Shareholders' interest (SHI)
	Liquidity – pertains to the capability of a company to repay short-term commitments, timeously as it become due.	• Current ratio (CR) • Quick ratio (QR) • Net investment in working capital (NIWC) • Debtors collection period (DCP) • Creditors payment period (CPP) • Inventory turnover (IT)
Sensitivity of income	**Cover ratio –** evaluate the sensitivity of the profits of the company to external factors while it furthermore assess the relative safety of the company's profits. Sensitivity ratios will give the stakeholder an indication of the risk that dividends will not be declared or interest will not be paid.	• Safety margin (SM) • Interest cover (IC) • Preference dividend cover (PDC) • Ordinary dividend cover (ODC) • Fixed charge coverage (FCC)

Source(s): Koen *et al*. (1994:42 - 52); Correia (2015: 5-16 - 5-20, 11-5); BPP (2013:37); Fouché and Barnard (2013:688 - 694); Els *et al*. (2014:80-83)

3.4.4 Growth indicators for effective decision-making

Analysing the growth in a company gives the stakeholders an indication of the intensity of operations over a number of years. The stakeholders will be able to use these growth indicators to predict the expected growth in several important ratios. The different ratios are calculated over a number of years to detect a trend within the company.

A trend is the general direction (Collins, 1986:924; Oxford, 2005:813) in which something develop (Oxford, 2005:813) or change (Oxford, 2005:813). Correia *et al*. (2015:5-12) explain that the trend will indicate the direction, rate and amount of change. Trends therefore indicate the phenomenon of a situation or reported information to the stakeholder and is an important factor (Correia *et al*., 2015:5-13) to consider in decision-making.

Effective decision-making consider the phenomenon of the growth indicators of a company. However, Koen *et al*. (1994:64) deduce that due to the lack of information in financial statements it is not easy to determine whether the growth is attributable to inflationary or real growth factors. Due to this it is necessary to compare the results of other companies in the industry in order to evaluate growth within the same economic climate.

Table 3-5 lists the most common growth ratios that stakeholders can use to determine the potential future direction of the company. These ratios are: growth in sales (GIS), earnings (GIE), dividend (GID), net asset value (GINAV); critical growth rate (CGR); and the funds required to finance growth (FRTFG).

Table 3-5: Growth indicators for effective decision-making

Growth indicators	What does it indicate?
Growth in sales (GIS)	An indication of how the sales revenue grows form one financial year to the next.
Growth in earnings (GIE)	Indicates the increase in the earnings of the company from one financial year to the other.
Growth in dividends (GID)	Determine the increase in dividends from one financial year to the other.
Growth in net asset value (GINAV)	Consider the accounting book values of the company from one financial period to another, the GINAV can be determined, which will depend on plough back, inflation, revaluation of assets and the issue of new shares.
Critical growth rate (CGR)	Indicates to the stakeholders of a company, whether the experience growth could be detrimental as it may end up in financial problems if growth is not being managed effectively.
Funds required to finance growth (FRTFG)	The FRTFG give an indication to the stakeholders of how much funds are required to ensure that the growth in turnover will not be hindered by a shortage of funds.

Source(s): Koen *et al*. (1994:64 - 68); Correia *et al*. (2015:16-2)

The preceding sections introduced the current financial models, which are used by stakeholders in financial decision-making. Lev (1974:11), Brady (1999:7), Gouws and Lucouw (1999:107), Brigham and Ehrhardt (2007:463) and Service (2013:1067) argue that these quantitative methods does not provide all the answers. The next section comments on how financial decision-making models can be improved.

3.5 Influencing financial decision-making models

The 2008 Global Financial Crises (GFC), which according to Amadeo (2017), was the worst economic disaster since the Great Depression of 1929, is still being felt by the global economy. Das (2016:1) proposes "*that the world is entering a period of stagnation the end of growth, and fragile and volatile economic conditions, which could lead to the destruction of hope and dreams*". The world is still trying to recover from the GFC, Das (2017:2) assesses that increasing debt has halted economic growth. Most authors agree that the GFC was the result of a confluence of factors. Table 3-6 lists the major factors that contribute to the GFC as perceived by various authors.

Table 3-6: GFC major factors

Contributing factors	Contributing factors
Mark-to-market accounting	A broken international monetary system
Ratings agencies	The rescue of Bear Stearns
Infighting among financial regulators	Lehman Brothers' bankruptcy
Securitisation of loans	The "Greenspan put"
Credit default swaps	Monetary policy from 2004 to 2006
Economic ideology	Basel II bank capital rules
Greed	Fannie Mae and Freddie Mac
Fraud	The failure of IndyMac Bank
Short-term investment horizons	The failure of Washington Mutual
Politics	Pro-cyclical regulation of loan loss reserves
Off-balance-sheet risk	Shadow banking
Bad economic assumptions	Ignorance of history
High oil prices	

Source(s): Maxfield (2015); Das (2016:33-61); Amadeo (2017) Adjusted

Careful consideration of the major factors that are listed in Table 3-6 as the causes or contributors to the GFC, all seem to have one commonality, namely financial decision-

making. One then has to wonder if more conservative financial decision-making could not have prevented or soften the GFC.

In an attempt to achieve more conservative financial decisions, the literature revealed two main themes that will influence financial decision-making models. A brief explanation of both follows next.

3.5.1 The importance of non-financial indicators in decision-making

Appropriate decision usefulness of financial accounting is only possible if the decision maker takes an extensive view of all the relevant information concerning the company. This view should not be limited to financial information; a holistic view which includes the consideration of non-financial information is important in decision-making by the stakeholders.

Non-financial information plays an important role in decision-making. Koen *et al*. (1994:13) define non-financial information as information obtained from any other source that is not the company's financial statements. Non-financial information includes but are not limited to the; political and economic climate, sociological background, technological advancement, fiscal policy, industry trends, labour relations and legal and environmental factors. Correia *et al*. (2015:1-38) deduce that climate changes and the impact of South Africa's mining legacy have further ramifications on agriculture and industries that rely on water resources.

Chapter 1 (Section 1.1, page 1) predicts that integrated financial reports that are useful for decision-making to all stakeholders and will provide; relevant, trustworthy and timeous information that will actively contribute to the sustainability of the global business community. The integrated financial reports include both financial and non-financial information that will be useful for all stakeholders in decision-making (Chapter 1, Section 1.1, page 1).

3.5.2 Introducing the lean philosophy

Gone are the days of collecting and presenting financial data, in a modern business environment users of accounting information require integrated financial information that

is useful for decision-making. Decision-making is an arduous process even more so if the issues are complicated and the significance of the outcome has major consequences to the stakeholders. Baroma, Bellisario, Chirico and Appolloni (2013) suggest that decision-making is the cognitive process leading to the selection of a course of action among alternatives. However, Navarro, Newell, and Schulze (2016:44) reason that a defining characteristic of decision-making under uncertainty is that people lack definitive evidence to motivate choices, due to ambiguity, insufficient expertise or missing information.

The decision of the Japanese not to remain in the ashes after World War II but to rebuild their economy led to the development on an innovative business philosophy (Abdullah, 2003:5; Abdulmalek & Rajgopal, 2007:224). Chakrabortty and Kumar (2011:11) supported by Holden (2011:265) argue that this innovative business philosophy was known as the Toyota Production System (TPS), which is now known as lean. However, Bahadir (2011:12) proposes that the lean philosophy can be traced back to the days of Henry Ford, the man that pioneered the art of mass production through the "Model T" car and which was refined by Taiichi Ohno, the father of TPS (Shah & Ward, 2007:77; Degirmenci, 2008:2).

Over the years many authors studied Toyota's business model as introduced by Ohno (1988). Some of the eminent published work is: Toyota Production System (Monden, 1983); The Machine that Changed the World (Womack, Jones & Roos, 1990); Lean Thinking (Womack & Jones, 1996); The Toyota Way (Liker, 2004); Toyota Production System (Kewalkumar, 2011). Monden (1983:28) identifies the primary goal of TPS is to eliminate waste and produce only the items needed at the required time and in the required quantities. Nordin, Deros and Wahab (2010:374) and Rahman, Sharif and Esa (2013:175) argue that the main aim in implementing a lean philosophy is the improvement of business performance through customer satisfaction and waste elimination by the continuous improvement of processes and quality (Chakrabortty & Kumar, 2010:11; Satao, Thampi & Dalvi, 2012:253) while Leam (2010:11), Krishnan and Mallika (2013:1) explains lean as a philosophy of waste elimination. The main reasons for implementing a lean philosophy is the necessity of elimination of waste, any non-value added activities (Singh & Belokar, 2012:71) and customer satisfaction that

relates back to value. Fine and Golden (2009:27) assert that value is what a customer is willing to pay for a product or service. Griffiths's (2014) study concludes that if companies want to remain successful and continue to be sustainable, adopting a lean philosophy is essential as it contain elements of waste elimination and customer focus that will embrace wealth creation.

3.6 Summary

In the introduction of this chapter, the purpose of decision-making and information requirements of different stakeholders were argued. Three main stakeholders groups were identified within the operating environment of a company. The influence of these stakeholders was discussed in terms of their impact on the company using Mendelow's matrix. Effective communication is necessary as it will influence stakeholders' decision-making as there exists a difference between intention and understanding of information. This discovery led to an analysis of the information requirements of stakeholders for decision-making purposes. It became clear that different stakeholders require different financial information in order to make financial decisions.

Reflecting on the theoretical underpinnings of general purpose accounting reports followed the argument of the purpose of decision-making and information requirements of different stakeholders. It was noted that stakeholders' decision-making requirements present a major challenge to accountants that ultimately resulted in changing the traditional role of accountants. Accountants need to become business partners providing relevant information for decision-making purposes.

It was determined that stakeholders make financial decisions based on considering financial performance measures. These financial performance measures were also adjusted as the business environment changed, distinguishing between AFP and VFP measures. However financial performance measures are not the only things that stakeholders consider in their financial decision-making. Stakeholders also consider risk- and growth indicators as well as non-financial information when making decisions.

It can be concluded that stakeholders have different information requirements for financial decision-making making use of different financial performance measures risk-

and growth indicators. These decision-making models are purposeful and are developed with the individual stakeholder group in mind. The next chapter deals with how the decision-making of stakeholders can be influenced by implementing lean accounting.

CHAPTER 4

INFLUENCING DECISION-MAKING USING LEAN ACCOUNTING

"Change is the law of life. And those who look only to the past or present are certain to miss the future." - John F. Kennedy

4.1 Introduction

With the increase in pressure on the accounting profession in an ever-changing business environment it is imperative that accountants become business partners. In the accountant's endeavour to become a business partner by providing stakeholders with relevant, timeous and quality information that is useful for financial decision-making; explained in Chapter 2; new and innovative things happened in accounting. One such an innovation is the development of lean accounting. Lean accounting attempts to address the shortcomings of traditional accounting's inability to promote a lean philosophy (Ofileanu & Topor, 2014:343). Maskell and Baggaley (2006:35) argue that in order to assist a lean philosophy, lean accounting is diverting away from traditional accounting systems. If there is a diversion from traditional accounting systems the accountant needs to familiarise him- or herself with this new development. As seen in Chapter 3, stakeholders use financial and non-financial information to make decisions.

Chapter 3 specifically dealt with the use of financial performance, risk and growth measures in the decision-making process of all stakeholders. The chapter focusses on the lean accounting principles and how it has the potential to improve the decision-usefulness objective of accounting and integrated reporting. Stakeholders rely on accounting information for decision-making purposes, taking the decision usefulness of accounting into consideration the chapter will focus on four subsections.

Firstly, the chapter will provide a background of the new accounting system that will be followed by a discussion on lean accounting principles. With the deployment approach in mind, an investigation into how the implementation of lean accounting will influence the financial reporting of a company in comparison to traditional accounting and how it will ultimately impact the decision-making models used by stakeholders follows. The

chapter ends with a summary of the key issues discussed, in addressing the sixth secondary research objective (Section 1.4.2, page 6).

4.2 Understanding the lean philosophy

Herbert (2014:51) determines that a lean philosophy will transform companies making use of sustainable behavioural change to achieve continuous improvement in working capital management, cost reduction and adding value to customers. Table 4-1 outlines the main principles of a lean philosophy and supplies a brief description of each. Table 4-1 provides a summary of the main principles that was identified in the literature on the philosophy of lean. Each of these principles were encoded, using three characters “PXY” whereby the first character is P that represents the philosophical principle and the XY represents a numerical value that represents the position of the principal in the table. By explaining this, P01 refers to philosophical principle 1. Table 4-1 further provides the principles and a short description of each of the identified principles.

Table 4-1: Coding of the main principles of a lean philosophy

Principle code	Principle	Description
P01	Define value in terms of the customer perspective	Creating value for customers is one of the pillars of lean. The company needs to understand what customers want and compare it to what the customer experience.
P02	Identifying value stream and eliminate waste	The value stream will deliver the value expected by the customers. Waste is anything that interrupts the smooth flow of value.
P03	Workflow pulled by customers	Lean demands the smooth flow of value through the value stream. Upstream production should not commence until it is requested by a downstream operation.
P04	Creating a culture of continuous improvement	Companies need to strive to perfection. The goal should be the creation of perfect flow throughout the value stream at the pull of customers.
P05	Involvement and engagement of all employees	Lean demands that there be a continuous improvement and elimination of waste by all employees in the value stream. Employees are part of the solutions and must receive timeous information about the flow and waste of the value stream. This will allow employees to help fix problems concerning flow and waste.

Source: Own research

After identifying the main principles it was necessary to establish how many researchers agreed on it and how they introduced it in the literature. Table 4-2 below is a summary of the main principles that most authors agree on, form the foundation of a lean philosophy to the date of the publication.

Table 4-2: The main principles of a lean philosophy

Author	Year	P01	P02	P03	P04	P05
Womack and Jones	1996	√	√	√	√	√
Maskell and Baggaley	2004	√	√	√	√	√
Ranaweera	2010	√	√		√	√
Herbert	2014	√	√	√	√	√
Griffiths	2014	√	√			
Griffiths	2015	√	√	√	√	√
Total	∑	**6**	**6**	**4**	**5**	**5**

Source: Own research

Table 4-2 highlight five important elements that need to be present in a lean philosophy namely: value stream, value creation, customer focus, employee centred and a continuous improvement culture. Customer focus is a key factor to create customer value. Lean philosophy is a broader approach and the process should be viewed holistically, lean aims to provide improvement to economical, efficiency and effectiveness to aspects. Salah and Zaki (2013:86) argue that introducing the lean philosophy render traditional accounting methods almost obsolete.

4.3 The necessity of yet another new accounting system

Getting to this point and carefully reconsidering the development and application of accounting as well as financial decision-making needs of stakeholders, the following question comes to mind. Is it really necessary for yet another new accounting system? In an attempt to answer this question the following section investigates the shortcomings of traditional accounting as well as how yet another new accounting system, namely lean accounting, will overcome these shortcomings

4.3.1 Shortcomings of traditional accounting

Lean philosophy has been widely implemented in many companies since the 1990s. Salah and Zaki (2013:86-89) explain that intense global competition since 1984 forced companies to improve manufacturing and business processes and to adopt a lean

philosophy and implement lean principles in order to become world-class competitors. Goldratt (1993) argues that accounting is the number one enemy of productivity, by implication Goldratt make a strong point that accounting does not support waste elimination.

Maskell (2009:101) distinguishes between five major problems with traditional accounting; lack of relevance, cost distortion, inflexibility, incompatibility with lean principles, and are expensive to maintain.

- *Lack of Relevance* – Traditional accounting reports are not directly related to the company's strategy. Its nature is too primarily collect and report financial information. The company's strategic goals refer to financial objectives and these goals can generally be reported through the financial accounting system, however, most of these goals are non-financial.
- *Cost Distortion* – Traditional accounting methods is concerned with cost elements. Total cost is determined by adding up material, labour and overhead costs for each level of the bill of material until the final product cost is determined. Traditionally great emphasis is being put on individual products costs and is used in decision-making.
- *Inflexibility* – Traditional accounting reports do not vary from plant to plant within a company. The reports are consistent across the company, the divisions, and departments. The Bicheno (2009) study concludes that traditional accounting methods essentially look backwards with reports frequently being received too late to be of value, as it is usually driven by the financial accounting calendar, and the reports come out monthly and these reports are not being used to control the business.
- *Incompatibility with lean principle* – One of the essential principles of lean thinking is the value stream. Value streams are formed for the products in lean companies. Manufacturing cells within value streams are structured to make a family of products or parts that require the same manufacturing sequence. Lean companies earn money by maximising flow on the pull from the customer, not by maximising resource utilisation.
- *Expensive to Maintain* – Traditional accounting methods create a detailed system of accounting for recording each and every transaction to trace the flow of processes through different stages of production. In a single-product environment, standard

costing will be easy to maintain and can produce meaningful reports for control. In a multi-product, a lean manufacturing environment, where each process can produce a variety of products, maintaining detailed product accounts is considered as wasteful. The use of standard costing in such an environment may produce volumes of variance reports that may not only be difficult to analyse but may also not provide any meaningful information to exercise control (Solomon, 2003:89).

Traditional accounting is inadequate (Enoch, 2013:508), inappropriate (Enoch, 2013:508), anti-lean (Maskell & Baggaley, 2006:L1; Maskell, 2013:30) and harmful to lean (Maskell, 2013:28). Traditional accounting fails to assess the operational improvements of the lean philosophy and therefore new accounting methods are needed. The new accounting methods must support the lean philosophy that is implemented by the company's manufacturing and business processes.

Ofileanu and Topor (2014:343) state that lean accounting is an evolving management accounting system that wishes to expedite the changes required in the implementation of a lean philosophy, and overcome the shortcomings of traditional accounting.

4.3.2 Overcoming the shortcomings of traditional accounting by implementing lean accounting

Maskell and Kennedy (2007:59-73) explain that if companies chose a lean philosophy, an important requirement is the substantial change in accounting, control and measurement methods. Lander and Liker (2007:3690 & 3694), Salam (2012:11), Ofileanu and Topor (2014:344) argue that some of the shortcomings of traditional accounting have been overcome using lean accounting principles. Lean accounting provides financial information, which is accurate, timeous and understandable for financial as well as non-financial users (Ruiz de Arbulo-López & Fortuny-Santos, 2010:581).

Many authors agree that lean companies strive to present financial information in English, in order to be useful for non-financial users. The primary objectives of lean accounting is to provide accurate, timeous and understandable information to increase customer value, profitability, and cash flow therefore ensuring sustainable growth, making use of lean tools to eliminate waste, while still fully complying with accounting standards providing relevant information for continuous improvement. Reporting

systems should be integrated, easy to read, to the point and be useful for decision-making.

Maskell and Baggaley (2004:2) supported by Salah and Zaki (2013:90) concludes that lean accounting provides; lean performance measurements, methods identifying financial impact of lean improvements, a better way to understand costs, methods to eliminate waste, freeing up time for finance people, develop new decision-making models, and focusing the company around the value creation of customers. Maskell (2013:30) argues that lean accounting provides vital operational and financial information to support the lean philosophy, the support that traditional accounting lack.

Jenson, Brackner, and Skousen (1996) studied several case studies and found that companies that implemented lean accounting principles to pursue excellence have the following common characteristics; integrating business and manufacturing cultures, ability to recognise lean philosophy and its effect on management accounting, emphasising on continuously improving accounting systems, striving to eliminate waste, and encouraging a pro-active management culture. Studies of DeFilippo (1996), Womack and Jones (1996), Maskell and Baggaley (2002), Cooper and Maskell (2003), Bahadir (2011) all indicated the urgency of aligning accounting principles with a lean philosophy. Maskell and Baggaley (2004:1) critiques accounting although highly regulated its validity in decision-making is still being questioned. Maskell and Baggaley (2004:1) propose that lean accounting will provide for better decision-making, improve revenue, profitability and addressing customer value. Ranaweera (2010:5) explains that lean accounting is the use of common sense and intuition in the day-to-day pursuit to continuously add value by eliminating waste (muda), inconsistency or variation (mura) and strain on resources (muri) for all stakeholders. Lean accounting differentiates itself from traditional by providing plain English reports (Table 4-3, page 79) that is understandable for all stakeholders (Chapter 1, Section 1.1, page 1). The next section explains the principles, practices, and tools (PPT) of lean accounting.

4.4 Principles, practices, and tools (PPT) of lean accounting

Enoch (2013:509) explains that the principles, practices, and tools of lean accounting (PPT) published in the “Target magazine” of the Association of Manufacturing Excellence (AME) in 2006 lays out the principal methods and shows how it fits into a lean business management system. The PPT highlights the tools and methods of lean

accounting as well as focusing on customer value. The PPT are summarised into five principles in Table 4-3.

Table 4-3: Principles, practices and tools of lean accounting (PPT)

Principles	Practices	Tools of lean accounting
Lean and simple business accounting	Continuous waste eliminating transactions, processes and reports	Value stream mapping (current and future state) Kaizen (continuous improvement) PDCA problem-solving
Accounting supporting lean change	Management control and continuous improvements	Performance measurement chart linking metrics to process, value streams, company reporting to business strategy, target costing and continuous improvement Value stream performance boards containing break-through and continuous improvement projects Box scores showing value stream performance
	Cost management	Value stream costing Value stream income statements
	Customer and supplier value and cost management	Target costing
Clear and timeous information	Financial reporting	Plain English financial reports Simple, largely cash-based accounting
	Visual reporting of financial and non-financial performance measurements	Primary reporting using visual performance boards; division plant, value stream, cell/process in production, product design, sale/marketing and administration
	Decision-making	Incremental cost and profitability analysis using value stream costing and box scores

Table 4-3: Principles, practices and tools of lean accounting (PPT) (continued)

Principles	Practices	Tools of lean accounting
Planning in a lean environment	Planning and budgeting	Hoshin policy deployment Sales, operation and financial planning (SOFP)
	Impact of lean improvement	Value stream cost and capacity analysis Current and future state value stream maps Box scores showing operational, financial and capacity changes from lean improvements. Plan for financial benefits from lean changes.
	Capital planning	Incremental impact of capital expenditure on value stream box scores. Used with 3P approaches.
	Invest in people	Performance measurements tracking continuous improvement participation, employee satisfaction, and cross-training. Profit sharing
Strengthen internal accounting control	Internal control based on lean operational controls	Transaction elimination matrix Process maps showing controls and SOX risks
	Inventory valuation	Simple methods for inventory valuation without the requirement for perpetual inventory records and product costs.

Source(s): Maskell and Baggaley (2006:L3) Adjusted

From Table 4-3 the five principles of lean accounting are evident. The five principles consists of; simple business accounting, accounting principles supporting lean change, clear and timeous information, planning in a lean environment and strengthening internal accounting controls. The literature are filled with evidence that companies making use of lean accounting have better information for decision-making, add more value to customers, reduce waste and increase cash flow and therefore ultimately increase the value for shareholders.

Singh and Belokar (2012:71) assess that since 2005 many lean methods were developed and implemented by companies to support these five lean accounting principles. The literature revealed the following nine eminent lean methods; Value Stream Mapping (VSMap), Kaizen, total quality management (TQM), Kanban, Just-in-time (JIT), Lean Six Sigma (LSS), total productive maintenance (TPM), 5S, and cellular manufacturing.

VSMap visually epitomise all the activities needed to manufacture a product (Woehrle & Abou-Shady, 2010:67). Chakrabortty and Sanjoy (2013:13), explain that value stream management (VSM) entails the recognition of all the essential and gratuitous phases in the production process and abolishing the latter. Fonou Dombeu (2016:27) explains the VSM as a diagram of the current production process, in order to determine ineffectiveness and altering it to the anticipated production process. In other words, the VSM is a visualisation of the production process to determine unnecessary activities, which could result in wasteful activities. By eliminating these wasteful activities the company will be able to increase performance and profitability.

Kaizen highlight areas within the company that require improvement and is a cost-saving method. Titu, Oprean and Grecu (2010:1); Ramezani and Razmeh (2014:44) explain Kaizen as a philosophy of continuous improvement that involves everybody in the company working towards the improvement of productivity, business process, quality of product or service delivered to customer to achieve higher business performance and profitability. Shah and Ward (2007:788) conclude that total quality management (TQM) is a management practice that accentuates customer satisfaction, teamwork and continuous improvement. TQM is similar to Kaizen as it also strives towards continuous improvement of quality to customers, lower cost and increase productivity.

Kanban on the other hand is a production strategy as Rahman *et al*. (2013:174) argue that intentsify the minimalisation of cost through the eradication of overproduction. Companies using Kanban, only manufacture products that are to be supplied momentarily to the customer, this eliminated overproduction and reduced production costs.

Muslimen, Sha'ri and Abidin (2011:4) suggest that a company should only start the production process once a customer order has been received; this will lead to the reduction of inventory and are known as a Just-in-time (JIT) production system. Fonou Dombeu (2016:27) predicts this will lead to the reduction of storage costs and an improvement of the manufacturing process. Lean Six Sigma (LSS) is another continuous improvement method that focusses on the elimination of waste in all facets of the business process according to Psychogios, Atanasovski and Tsironis (2012:124).

O'Rourke (2005:20), Yeh, Lin and Wang (2011:12357) argue that LSS will increase customers and employee's satisfaction, reduce costs, improve operations and increase competitive advantage of the company. Bakri, Rahim, Mohd and Ramli (2012:488) stresses the need of a programme that will prevent production breakdowns, eliminating waste and produce the best. The elements are essential to add value to customers. Ahmed, Hassan and Taha (2004:93); Ghosh (2011:114); Bakri *et al*. (2012:488) identify this programme that purposes improving the production process through preventative maintenance as total productive maintenance (TPM).

The continuous improvement method used to eliminate waste by properly organising the workplace is refered to as the 5S (Abdullah, 2003:11; Nordin *et al*., 2010:378; Matt & Rauch, 2012:424). Zidel (2006:12) and Katkamwar, Wadatkar, and Paropate (2013:1751) propose sorting, setting, shining, standardising, and sustaining the workplace will enables employees to easily identify problems. The final lean method is known as cellular manufacturing. Rammasamy (2005:21); Abdulmalek and Rajgopal (2007:224) distinguishes this manufacturing process from other processes in the manner that resources needed to manufacture products are arranged. The required resources are arranged into cells; in order to facilitate the manufacturing process.

Cellular manufacturing is mainly used by companies that manufacture a variety of products to customers (Abdullah, 2003:10). Furthermore, Abdullah (2003:10) argues that grouping resources in cells improve productivity, elimination of waste in the

production process, and increase in communication and teamwork between employees. The next section expounds the influence of lean accounting on decision-making.

4.5 The influence of lean accounting on decision-making

From the previous sections it became evident that there is a difference between traditional and lean accounting philosophy, approaches and objectives. If a company decides to implement a lean philosophy moving towards lean accounting is essential, as a lean philosophy is not supported by traditional accounting. The lean philosophy is mainly about eliminating waste and increasing value. Ramezani and Razmeh (2014:44-46) deduce that value streams must be determined to support the reduction of cost, improving customers value and leading to an increase in the company's profit. Salah and Zaki (2013:89) explain that value streams are one of the essential principles of lean accounting. Value stream represents all the things that can be done to create customer value (Womack & Jones 1996:16-19).

Enoch (2013:510) agrees with Womack and Jones in that, all the activities, both value-added and non-value added, required within a company to deliver a specific product or service to the end-customer are regarded as value stream. Maskell (2013:28) concludes lean accounting focus on financial and operating activities of the whole value stream rather than individual departments or processes.

The company needs to include all important processes to create value in the value stream. The value stream starts from sales go to purchasing, production, shipping and ultimately cash collection. Value streams is where companies make money (Maskell & Baggaley, 2004:95) through creating value for customers and eliminating waste. Value streams are mapped to identify waste and obstructions to flow. Csikszentmihaly (2002:74) states that flow provides a sense of discovery, creating a feeling into a new reality, and pushes to higher levels of performance. In an ever-changing and highly competitive business environment, mastering flow will ultimately lead to improvement within the company and decision-making ability of stakeholders. To create value all three flows namely; physical material-, information-, and cash flow within the value stream must improve. Controlling and managing the value stream depends on three primary issues; focus, accountability and simplicity (Maskell & Baggaley, 2004:98; Bahadir, 2011:32).

4.5.1 Value stream performance measurements

Value stream must focus on simplistic reports to be accountable for short- and long-term improvements. Abuthakeer, Mohanram and Kumar (2010:52-53) demonstrate that lean accounting principles attempt to simplify things and suggest that by eliminating the root causes of variability the process can be brought under control. Csikszentmihaly (2002:36-41) argues that disorder in flow leads to psychic entropy while order on the opposite leads to optimal flow. Simplifying and eliminating variability will therefore have a positive influence on flow that ultimately creates value for stakeholders in decision-making. Previously it was deduced that continuous improvement and the pursuit of perfection are vital to the lean philosophy.

Ofileanu and Topor (2014:348) propose that continuous improvements can be measured, controlled and managed through the value stream performance measures that are divided in financial, capacity and operational measures. Capacity performance measures, will calculate the effective use of resources, and is viewed as the bridge between financial and operational change. The elimination of waste because of the effective use of resources ultimately causes financial benefits. Bahadir (2011:23) explains that value stream performance measurements should reflect the lean philosophy. Table 4-4 summarises the value stream performance measurements by explaining what it measured.

Table 4-4: Value stream performance measurements

Performance Measurements	What does it measure?
Operating	Consists of thirteen (13) elements that include: creditors payment period, current ratio, debtors collection period, inventory turnover, net investment in working capital, quick ratio, debt/equity ratio, equity to total shareholders' interest, shareholders' interest, total assets to total liabilities, total shareholders' interest to total assets, critical growth rate, and funds required to finance growth. Section 7.3, page 222 reports on the findings of the selective coding process regarding these operating elements.
Capacity	Eight capacity indicators namely; return on assets, fixed charged cover, interest cover, ordinary dividend cover, preference dividend cover, safety margin ratio, growth in dividends, and growth in sales. Section 7.3, page 222 reports on the findings of the selective coding process regarding these capacity elements.
Financial	The selective coding process reports in Section 7.3, page 222, nine financial elements that include earnings per share, price earnings ratio, return on equity, cash flow return on investment, cash value added, economic value added, market value added, growth in earnings, and growth in net asset value.

Source: Maskell and Baggaley (2004:131) Adjusted

Table 4-4 provides the primary value stream performance measurement, however, this is only an indication of what should be measured. It is necessary to say that there is not one standard fit for all companies, and stakeholders need to adjust the performance measurement according to their needs and should be motivated by continuous improvement. Maskell and Baggaley (2004:128) suggest these measurements should be presented visually using a performance measurement board showing the box scores.

4.5.2 A typical value stream box report

The box scores provide a summary of the value stream performance and are typically updated weekly with at least operational and financial information. Maskell and Baggaley (2004:143) argue that box scores give a common view and language for all stakeholders about lean performance in order to create customer value and eliminate waste. The primary purpose of the box score report accordingly to the literature is that it focusses the attention of stakeholders on areas that can benefit from continuous improvement efforts. Maskell and Baggaley (2004:99), Woehrle, and Abou-Shady (2010:67), Chakrabortty and Kumar (2011:14), Satao *et al*. (2012:256) state that value stream box score reports can be used to measure improvements of a company. The report evaluates operational, financial and capacity performance areas of the value stream and includes historical, current and future periods. Table 4-5 indicates a typical value stream box report.

Table 4-5: A typical value stream box report

Performance evaluation areas	Element	Previous period	Current period	Future period
Operating				
Capacity				
Financial				

Source: Maskell and Baggaley (2004:152) Adjusted

Table 4-5 indicates the performance evaluation areas as operational, capacity, and financial. These individual areas identified specific elements that need attention over time. The comparison between historical, present and future help to focus the stakeholders' attention on the elements. By visualising accomplishments stakeholders can celebrate achievements and be motivated for future plans. Bahadir (2011:23) argues that by using value stream box reports all stakeholders are empowered, as the information for decision-making becomes more useful, understandable and therefore more transparent.

Maskell and Baggaley (2006:38) is supported by Ofileanu and Topor (2014:348) that value stream box reports allow for simple and understandable presentation of financial and non-financial information, which influences the decision-making ability of all stakeholders. Another advantage of value stream box reports argued by Maskell and Kennedy (2007:66) is that it will be helpful to identify areas that need to improve performance and decision-making. An expansion on the value stream box report is the development of value stream performance report (VSPR).

4.5.3 The value stream performance report (VSPR)

The VSPR provides stakeholders with accurate, relevant, timeous and easy to understand information about the value stream. The development of the VSPR can be linked to the International Federation of Accountant's explanation on accounting policies. International Federation of Accountants (IFAC) (2014(b):A832) explains that accounting policies "*are the specific principles, bases, conventions, rules and practices applied by an entity in preparing and presenting financial statements*". IFRS (2014(b):A834) proposed that when IFRS explicitly apply to a transaction, event or condition the accounting policies shall be tenacious to the IFRS. However, if IFRS is absent management will use judgement in the development and application of accounting policies (IFRS, 2014(b):A835). In using judgement to develop and implement accounting policies the accounting information must be relevant and reliable to the decision-making requirements of the users (IFRS, 2014(b):A835).

Rao and Malyadri (2015) deduce that financial statement is a structured representation of the company's financial position, performance and cash flow that is useful to different users of accounting information in decision-making. Consistency of accounting policies remains the key indicator. Inventory normally forms a large part of the working capital investment in a company's statement of financial position. IAS 2 specifically deals with inventories.

The objective is to prescribe the accounting treatment of all inventories excluding financial instruments and biological assets related to agricultural activities. The primary problem is to determine the cost to be recognised as an asset until the related revenue is recognised (IFRS, 2014(b):A799). IFRS (2014(b):A800) illustrates inventories as assets held for sale in the ordinary course of business, which are in the process of production for such sale and the materials consumed on the production process or rendering of a service. IFRS (2014(b):A800) value inventories at the lower of cost and net realisable value.

IFRS (2014(b):A800) explains "*net realisable value is the estimated selling price in the ordinary course of business less the estimated cost of completion and the estimated cost necessary to make the sale*". The cost of inventories consists of the purchase price of material, conversion cost of material to completed, sellable product as well as all the

cost to get the inventory to its present condition (IFRS, 2014(b):A800). IFRS (2014(b):A805) concludes that the financial statements shall disclose the accounting policies adopted in measuring inventories including the cost formula used, the total carrying amount of inventories that could include inventories carried at fair value less cost to sell end the write-down of inventories recognised as an expense. IFRS (2014(b):A800) states "*the fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measured date*".

IFRS (2014(b):A802) proposes the standard cost method or the retail method as cost measurement techniques. The standard cost method takes normal levels of material, labour and capacity utilisation into account when determining a standard cost. The retail method is mainly used in the fast moving consumable goods (FMCG) industry, where large volumes of rapidly changing items with similar margin make other costing methods impracticable. The method results in an approximated cost of inventory using the sales value of inventory and reducing it by the gross margin percentage. From the above it is evident that the cash flow expense of an inventory purchase could form part of the statement of profit and loss and other comprehensive income as the revenue was not yet recognised.

IFRS (2014(a):A607) concludes that fair value measurement is "*the price that will be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date*". Orderly transactions are normal business transactions that are not forced due to liquidation or distress sale (IFRS, 2014(c):A632). IFRS (2014(c):A631) conclude that market participants whether buyers or sellers are independent, knowledgeable, able and willing to enter into a transaction. IFRS 13 allows for the following valuation techniques namely; cost, income and market approach.

The cost approach reflects the amount that would be required currently to replace the service capacity of an asset, commonly refered to as the current replacement cost. In contract to the cost approach the income approach convert the expected cash flows or incomes or expenses to a present value discounted amount. The income approach influences the fair value measurement on the basis of the value as indicated by current market expectation of these expected future amounts (IFRS, 2014(a):A630). The

market approach on the other hand uses prices and other relevant information generated by market transactions involving similar assets and liabilities.

Rao and Malyadri (2015) subject that fair presentation depends upon faithful representation of the effects of the transactions, events and conditions in consonance with definitions and recognition criteria for assets, liabilities, income and expenses as set out in the IFRS framework. The Harman and Peterson (1990), Hyer and Wemmerlöv (2002) and, Ruiz de Arbulo-López and Fortuny-Santos (2010) studies argue that some of the problems of traditional accounting techniques include:

- Unreasonable overhead cost allocation policies.
- Depreciation policies do not match actual asset deterioration.
- Efficiency management is an internal process not measuring customer-related aspects such as just-in-time and quality.
- The aim is to reach the standard cost.

Du Toit, Hopkins, Oosthuizen, Qua-Enoo and Smith (2007:39) demonstrate that standard cost is determined, under efficient employment of production resources under current working conditions by reasonably competent management (Els, Van der Walt, & De Wet, 2012:391), in advanced long before the cost is actually incurred. Du Toit *et al*. (2007:181) state that standard cost is predetermined costs per unit. Products seem to cost more or less than the actual cost that could lead to wrong decisions by the stakeholders. The main problems identified with standard costing by lean supporters are in its underlying assumptions. The underlying assumptions include; the existence of one ideal cost per product, overhead cost directly related to labour- or machine hours require to manufacture a product, profit maximisation is the result of optimum utilisation of production resources, customer service levels depend on high inventory levels, controlling product costs through detailed tracking of actual costs, and cost optimisation is achieved by optimising each individual part of the production process. Lean philosophy violates (Maskell & Baggaley, 2004:135, Kewalkumar, 2011:41) these standard costing assumptions. Standard costing that forms part of traditional accounting provide standard cost per product and not the cost per value stream, which may conceal waste (Maskell & Baggaley, 2004:135). Unlike the traditional performance report that uses standard costing, VSPR reports embody the real cost of the value

stream (Maskell & Baggaley, 2004:133) and is not distorted by the allocation of overheads according to standard costing methods. Table 4-6 compares lean accounting with traditional accounting in terms of the principles of a lean philosophy.

Table 4-6: Comparison between traditional accounting and lean accounting in terms of lean principles

Lean principle	Traditional accounting	Lean accounting
P01	Enables cost plus pricing; Leads to bad decisions	Enables value-based pricing Provides information for effective decisions
P02	Supports a departmental view of production	Supports a value stream (total process) approach
P03	Complex and wasteful process Enables inventory valuation	Quick, simple, and timely Enables inventory valuation
P04	Narrows the focus of financial control and improvement Supports measurements that undermine lean	Enables value stream financial control and improvement Supports value stream measurements and box scores
P05	Difficult for all stakeholders to understand	Clear and easy for all stakeholders to understand

Source: Maskell (2012); Intrieri and De la Torre (2015) Adjusted

Lean accounting was developed from the lean philosophy and it is therefore important to consider the lean principles when comparing it with traditional accounting. Table 4-6 supports the views of many scholars that traditional accounting does not produce financial reports that can be used effectively in a lean environment.

Lean companies proved that overhead cost relates to the value stream and not to labour or machine hours. Profit maximising is the result of the efficient flow through the value stream at the pull of customers creating value to customers and eliminating waste. VSPR does not discriminate between direct and indirect cost such as standard costing. All cost within the value stream that is directly related to the identified value stream are grouped together. VSPR include traditionally direct- and indirect cost paid by cash with the exception of material cost, which is generally calculated from material actually purchased. This actual material purchase amount will be assigned to the value stream. The validity of material cost will be adversely affected by high material and work-in-process (WIP) inventories.

The inclusion of the total cost of materials purchase and cash paid for all other direct and indirect costs in the calculation of VSPR is remarkably different to the calculation of

standard costing. By calculating the average cost per unit of the value stream, the numerator that is the total cost and units dispatched the denominator, an increase will be inevitable if the dispatched units, sales, are less than the units produced. This will result to higher costs and lower profits. However, the traditional standard costing will treat this as inventory, whereby the inventory will increase and the cost per unit decrease, whereby profits are higher and costs are lower. This distortion of the profit encourages inventory pilling to reduce cost and increase profits. Lean ignore inventory as a cost of sales in the value stream and expense the total purchases in the current period, resulting in lower profits, this can be seen as a more conservative approach, as it will result in a lower ROE. Table 4-7 summaries the comparison of traditional (IAS, IFRS and GAAP based) performance reports with value stream (lean based) performance reports.

Table 4-7: Comparison between traditional accounting and lean accounting reports

	IAS-, IFRS- and GAAP-based reports	Lean-based reports
Timing	Monthly report	Weekly and monthly
Measurement unit	Company and departmental results.	Value stream results
Understandability	Complicated financial reports that only financial literate understand.	Visualisation of reports that all stakeholders are able to understand.
Complexity	Make use of different accounting methods in report gross margin, cost variances and overhead absorption.	Reports are presented on single sheet in "plain English" without the necessity to interpret.
Inventory	Inventory form part of the cost of sales calculation, whereby cost of sales amounts are adjusted with inventory, this could result in higher profits.	Lean ignore inventory as a cost of sales in the value stream and expense the total purchases in the current period, resulting in lower profits
Compilation	Use full absorption costing and standard cost variances in preparing reports.	Use actual cost to report on the value stream.

Table 4-7: Comparison between traditional accounting and lean accounting reports (continued)

	IAS-, IFRS- and GAAP-based reports	Lean-based reports
Level of reporting	Consolidated across cost centres, divisions and groups.	Consolidated across value streams.
Compliance	Provides external reporting and comply with all statutory requirements of IFRS and GAAP.	Provides external reporting and comply with all statutory requirements of IFRS and GAAP. In addition it provides information for decision-making purposes for stakeholders.

Source: Own research

From the comparison in Table 4-7 value streams are becoming a key concept when considering lean-based reports. It can therefore be deduced that value stream performance reports are an important part of lean accounting.

The results of Table 7-8 (page 223) clearly indicate that by adjusting the line item ‘inventory change’ over the financial period, the company’s comprehensive performance report adhere to the requirements of International Accounting Standards (IAS), International Financial Reporting Standards (IFRS) and Generally Accepted Accounting Principles (GAAP).

The full extent of the influence on the decision-making of stakeholders becomes more evident in Chapter 7 where the data and research results are censoriously reviewed. Lean accounting focusses on the value created for customers and elimination of waste. It is therefore the value to the customer that determines price and not product cost. Product cost has no relation to the created customer value. No decision by the stakeholders will be made with reference to the product cost. Stakeholders should consider decision-making with a holistic view to the overall profitability of the value stream.

4.6 Summary

This chapter investigated lean accounting principles and whether it could potentially improve the decision-making efforts of the different stakeholders within a company.

Lean philosophy was firstly explained in terms of the main lean philosophical principles, after which the power of lean accounting gave some insight on how the shortcomings of traditional accounting are being addressed. Value streams are contradicting the traditional accounting approach (Section 4.5, page 83) revelled.

Value streams are supporting stakeholders' efforts to add value by reducing no-value added activities by making use of continuous improvement principles. The company's value streams are accountable for creating its own value, decreasing waste and ultimately improving profit, therefore the use of value stream box reports is the answer. Woehrle and Abou-Shady (2010:72) explain that value stream box reports give stakeholders a visual illustration of financial and non-financial elements that influence the company on different levels. Maskell and Kennedy (2007:65) assess that value stream box reports are presented in an understandable format that is useful for all stakeholders in decision-making.

In reflecting on this chapter it is clear that by implementing lean accounting principles, decision-making of all stakeholders would be influenced. Ringen, Aschehoug, Holtskog and Ingvaldsen (2014:243) claim that lean is not an option, it is mandatory for companies operating in global markets. If the accounting profession wants to deliver quality financial information that improves the decision usefulness to stakeholders, the spectator attitude should change to that of business partner. It seems that the development of an integrated decision-making model is what stakeholders need in the current business environment. The next chapter presents the methodology of the study.

CHAPTER 5

RESEARCH METHODOLOGY

"No inventor has permanent possession of the invention…… a child once launched is very much subject to the combination of its origins and the evolving contingencies of life. Can it be otherwise for a methodology?" Strauss & Corbin (1998:283)

5.1 Introduction

Chapters 2 to 4 presented the variables related to this study that form the literature background. Knowledge was obtained by reviewing the literature within the theory of accounting standards, financial decision-making and lean accounting principles. Chapter 4 concludes by arguing the need for the development of an integrated financial decision-making model using lean accounting principles that support the primary objective (Section 1.4.1, page 6) of the study.

Chapter 6 discusses the development of an integrated financial decision-making model and its supporting substance based on a framework for model development. This framework was established by taking into account all the variables in the financial decision-making models available to stakeholders and should be useful to researchers to develop future models (Section 6.4, page 144).

The purpose of this chapter is to explain the philosophical paradigm and research methodology that applies to this study. Discussing the research design and methodology used in the study, and justifying its appropriateness forms the basis of this chapter. This discussion revolves around the research framework, philosophy and the motivation for using it. This chapter firstly elaborates on the philosophical paradigm and research design applied in this study. Which is followed by a discussion of the population and sample selection where after an explanation is given on the development of the model. A discussion on how the data were obtained ethically by applying a combination of grounded theory with multiple case study methods follows and forms the basis of the empirical part to the study. It will encompass a qualitative method using a hybrid of grounded theory and multiple case study using document analysis in the process of data collection. This ensures a systematic procedure of reviewing, and evaluating documents. The results of the grounded theory and multiple

case study are discussed in Chapter 7. The chapter concludes with a summary of the discussion.

5.2 Research design

The research design provides the researcher with the plan and procedures (Creswell, 2012:293; Maxwell, 2012:2; Kumar, 2014:39) to link the research question with the data (Punch, 2006:47) of the study. These plans and procedures include all aspects of the study from the strategically assumptions to the operational detail (Creswell, 2009:3) by which subjects will be determined and how information will be collected (Welman & Kruger, 1999:46). Creswell (2009:5) predicts that the research design is the result of the researcher's life philosophy, enquiring strategy, and method used. Stephenson (2012:62) argues that in addition; the research problem, personal experiences and requirements of the audience ultimately influence the research design.

Creswell (2009:6) and Harrits (2011:151) asserts that the manner in which the researcher investigate is guided by an epistemology and ontology outlook. Krauss (2005:758) explains epistemology focusses on knowledge while Tracey (2013:38) concludes it refers to the nature of knowledge while Leavy (2014:3) explains ontology as a perceived reality of individuals that depicts their philosophy. Creswell (2009:9) defines a philosophy as *a basic set of beliefs that guide action*. By explaining ontology De Villiers (2015:28) distinguishes between; "*a realist perspective where an external reality exists objectively from the researcher or from a relativist perspective where reality depends on various circumstances and factors*". The researcher's ontological perspective determines how the epistemological framework will be applied to knowledge that in turn directs the research paradigm.

5.2.1 Research paradigm

Research paradigm is ideas, assumptions, worldviews (Fossey *et al.*, 2002:718), practices, beliefs (Morgan 2007:50), the universe (Leavy 2014:3) that the researcher used to create and observe knowledge. The literature revealed a large number of research paradigms. Roth and Mehta (2002:133), McKerchar (2008:6-7), Creswell (2009:6-11), Delport *et al*. (2013:6-10), Manning and Stage (2016:19) describe positivism (critical realism), post-positivism, constructivism, pragmatism or participatory, feminism, post-modernism and interpretivism. Smith (2011:1) critiques accounting research as having undeveloped research theory, having to rely on other disciplines

such as; economics, finance, psychology, sociology and organisational behaviour for theory, methods and instruments. Scapens and Theobold (2002:9); Gurd (2008:122) state that accounting research form part of social sciences research. Positivism and interpretivism paradigms are reported as the most popular research paradigms in social science.

Positivism originated from a group of philosophers, mathematicians and scientist at the turn of the nineteenth century (Juma'h, 2006:89). Considering the origins, the philosophy behind the paradigm is understandable. Realism is the philosophy behind the paradigm, whereby reality exists and the researcher needs to uncover the phenomena (Harwell, 2011:149) using experiments, quasi-experiments and tests (Mackenzie & Knipe, 2006:198) to authenticate (Creswell, 2014:36) theory. The positivist traditional approach remains most prominent in accounting literature however, non-positivist approaches, such as the interpretive paradigm has become acceptable (Smith, 2011:16).

Smith (2011:4) argues that an interpretive perspective is the result of external influences on the human actions. The action takes place within a structure of rules that binds participants. The researcher cannot just simply measure a situation but needs an understanding of the situation that may require active participation rather than a detachment. A critical perspective expands the sphere of the interpretive approach focusing on the ownership of knowledge and associated social, economic and political implications.

The philosophy stems for the need to understand a phenomena rather to uncover a phenomena (Fossey *et al*., 2002:720; Harwell, 2011:148). Repko (2012:118) scribes that the reality is influenced by individuals' interpretation and can never be fully known. McKerchar (2008:7) supported by Walliman (2011:17) argue that interpretivism cannot uncover the phenomena from which association or predictions can be made. By explaining the phenomena, Brynard and Hanekom (2010:16) and Walliman (2011:17) indicates that the interpretivist uses inductive reasoning, beginning with specific observations that is done repeatedly and then drawing a general conclusion. Smith (2011:3) surmises that observations are based on theory and are influenced by the motives and preferences of the researcher leading to the development of an interpretive and critical perspective. Mackenzie and Knipe (2006:198) propose that the interpretivist

researcher make use of interviews, observations and document reviews, to transform specific observations to general conclusions.

The research topic emerges from the review and analysis of literature on financial disclosure, integrated reporting, decision-making and lean accounting where the gap has been identified in Chapter 1 (Section 1.2, page 5). With the gap identified and the topic formalised the conceptual framework of the study was developed to clarify the important relationships, supporting theory, explanatory and intervening variables and the substantiation of causality.

Since the study is modelled on historical, literature and existential studies where the subjective understanding of the subjects is significant, an interpretive research approach was selected. The assumption is made that there are multiple realities requiring multiple methods for understanding. Meanings are the foundation of data with the consequence that the study has meanings that precede logic and fact. Observations are made through social, linguistic and cognitive skills of the researcher. The knowledge gained in the study was dependent on the process of discovery while the integrity of the findings depends on the social, linguistic and cognitive skills of the researcher in the data analyses and conclusions. In order to make the specific observation the researcher needs to determine the research approach.

5.2.2 Research approach

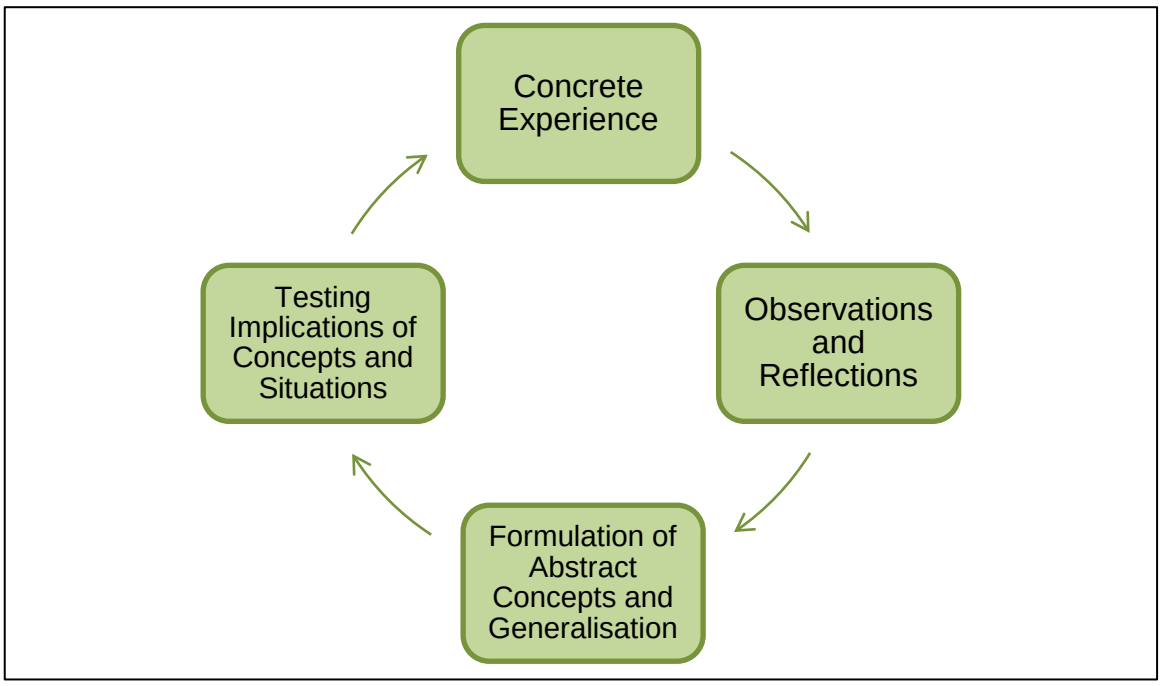
When conducting research, Leedy and Ormond (2010:6) explain that the research approach forms an intrinsic part of the project. The research approach defines the procedure (Singh, 2006:79) and scientific logic (Grix 2010:32) to get an answer to the research question (Denzin & Lincoln, 2011:12). Research approaches are either a deductive (theory to observation) or inductive (observation to theory) reasoning process.

Deductive reasoning starts with the theory and proceeds to the development of specific predictions following from application (Smith, 2011:3). Therefore, the predictions can be validated by successive observations. During the deductive approach, theory provides the basis for testing empirical observations. Smith (2011:21) assesses it as the most used approach of positivist accounting research.

Babbie (2010:22) supported by Smith (2011:2) argues that in comparison with deductive reasoning, inductive reasoning use specific observations from general theories in order

to generate theories. The inductive approach is the process whereby observations lead to the development of new or revised theories. Smith (2011:21), however, suggests that the traditional inductive model must be adjusted in the accounting discipline. Kolb, Ruben and McIntyre (1979:38) develop a variation of the traditional inductive approach in the Kolb's Experiential Learning Cycle. Figure 5-1 elucidates Kolb's Experiential Learning Cycle.

Figure 5-1: Kolb's Experiential Learning Cycle



Source: Kolb *et al*., 1979:38

Figure 5-1 indicates the development of variation of the traditional inductive approach. It is evident from Figure 5-1 that there is a distinction between inductive and deductive research. Deductive research tests a theory or phenomenon through testing, De Vaus (2011:5) calls this theory testing. Inductive research starts with the observation that then emanates into theory; De Vaus (2011:5) refers to this as theory building. This study requires the researcher to develop an integrated financial decision-making model using lean accounting principles.

The researcher using the inductive approach needs to recognise the importance of the internal process and human behaviour. Human behaviour allows for subjectivity, however, the inductive approach allows for human subjectivity without distorting the qualitative and quantitative findings (Smith, 2011:21). Human behaviour is central to the

conceptualising and understanding of the accounting discipline; therefore most authors argue that the approach needs to take advantage of the subjective environment.

5.3 Research methods

This section considers the procedures implemented in the study. These procedures determine the discourse (Singh, 2006:79) and direction (Leedy & Ormrod, 2010:12) of the study and depends largely on the data characteristics (Williams, 2007:65; Flick, 2011:86). Williams (2007:65) distinguishes between three commonly used research methods namely; qualitative, quantitative and mixed research designs.

5.3.1 Qualitative research

Qualitative research is broadly defined as an investigative method used in social science to explore, understand and explain (Marshall & Rossman, 2014:33) a contemporary (Gray, 2009:166) issue or phenomenon by collecting, analysing and interpreting qualitative data (Creswell, 2009:4; Erikkson & Kovalainen, 2016:3) selected by the researcher based on the problem statement and research objectives (Flick, 2011:12). Denzin and Lincoln (2008:311-312) conclude that qualitative researchers study an issue or phenomenon in their normal surroundings, in an attempt to make sense it.

The researcher is able to obtain accurate information by studying the issue or phenomenon in their natural settings (Flick, 2011:14) using data collection methods such as; interviews, questionnaires, document analysis and observations (Greener, 2008:73; Kumar, 2014:196). Gary (2009:166) explains that qualitative research is beneficial to conduct research on contemporary as well as established research issues. McNulty, Zattoni, and Douglas (2013:183) argue that qualitative research provides a basis for rethinking and challenging some of the dominant assumptions and meanings about an issue or phenomenon. Shank (1989), Shank and Govindarajan (1992), Moon and Bates (1993), Shank and Govindarajan (1993), Shank (1996), Wouters, Kokke, Theeuwes and Van Donselaar (1999), Mouritsen and Larsen (2005), Cugini, Carù and Zerbini (2007), Figge and Hahn (2013); successfully employed qualitative methods in management accounting research. Quantitative research is explained in the next subsection.

5.3.2 Quantitative research

Quantitative research is different to qualitative research as it aims to deductively (O'Rouke, 2005:38) explain a phenomenon (Borrego, Douglas & Amelink, 2009:53) or event (Flick, 2011:10) or make a comparison (O'Rouke, 2005:38) or find a correlation (Castellan, 2010:7) of theoretical identified issues; using numerical (Borrego *et al*., 2009:53; Flick, 2011:10) or statistical data (Klassen, Creswell, Plano Clark, Smith, & Meissner, 2012:4) from a sample in a population (Borrego *et al*., 2009:53; Flick, 2011:11) in order to report a generalised (Flick, 2011:13) result. Turner (1990), Chan and Lynn (1991), Gietzmann (1992), Rangone (1997), Banker, Chang and Das (1998), Halkos and Salamouris (2004), Sartorius and Kirsten (2005), Deville (2009), Mensah, Schoderbek and Werner (2009), Deville, Ferrier and Leleu (2014); successfully employed quantitative methods in management accounting research. Mixed method research is explained in the next subsection.

5.3.3 Mixed method research

The combination of qualitative and quantitative research methods led to the development of mixed method research. Kumar (2014:20) argues that mixed method research is the collection and analysis of qualitative and quantitative data, consecutively or simultaneously (McKerchar, 2008:20) to meet the research objective. Authors (Harwell, 2011:151, Aagaard, Bloch, Graversen, Mejlgaard, Schmidt, Schneider, & Sorensen, 2014:17; Kumar, 2014:20) state that mixed method research considers the inherent strengths and weaknesses of both qualitative and quantitative research methods inconsideration and therefore influences the results and validity of findings. Cheng and Manes (1992), Hansen, Mowen and Hammer (1992), Hwang, Evans, John and Hegde, (1993), Banker and Johnston (2007); successfully employed mixed methods in management accounting research. In the wake of the previous discussions, the researcher was at a point to decide on the method that would best suit the study.

Table 5-1 compares the research methods in terms of; philosophical perspective, types of research, the purpose of the research, data collection and data analysis.

Table 5-1: Comparison between qualitative, quantitative and mixed method research

	Qualitative research methodology	Quantitative research methodology	Mixed research methodology
Philosophical perspective	Interpretivism worldview (Devetak, Glazar & Vogrinc, 2010:79). Naturalistic, social, multiple and subjective reality where the researcher interacts with researched subjects (Castellan, 2010:4).	Positivist worldview (Welman, Kruger & Mitchell, 2005:7; Devetak *et al*., 2010:7). Objective reality, researcher is independent on researched subjects (Castellan, 2010:4).	Positivistic or interpretivist worldview (McKerchar, 2008:20; De Villiers, 2015:50).
Types of research	Case study, ethnography study, ground theory study, phenomenological study, content analysis study (Williams, 2007:6) and cultural studies (Castellan, 2010:4).	Experimental, quasi-experimental, single subject and descriptive, comparative, correlational, *ex post facto* studies (Castellan, 2010:4).	Quasi-experimental, *ex post facto*, cross sectional studies (Leedy & Ormrod 2010:144). Convergent, explanatory, exploratory, embedded, transformative studies (Creswell & Plano Clark 2011:151).
Purpose of the research	Exploring, describing or comparing social phenomenon (Russell & Ryan, 2010:8).	Determining facts, relationships among variables and verifying hypotheses (Castellan, 2010:5).	Develop an understanding, to explain the results, exploring unknown variables, examine results through experimental methods, and transforming society (Creswell & Plano Clark 2011:151).

Table 5-1: Comparison between qualitative, quantitative and mixed method research (continued)

	Qualitative research methodology	Quantitative research methodology	Mixed research methodology
Data collection	Observation, interview, documents and audio-visual material (Creswell, 2014:234).	Questionnaire, survey and test in the form of numbers and statistics (Castellan, 2010:4).	Content analysis (Leedy & Ormrod 2010:144) open-ended interviews, open-ended observations, documents and audio-visual materials (Creswell & Plano Clark 2011:171).
Data analysis	An inductive process whereby the researcher collects and codes the data, establish themes, observes the patterns among the data and develops explanations or theory that can be generalised (Harwell, 2011:149). Analysis is subjective in that they are the reflection of the researcher's interpretation of the data (Zikmund, Babin, Carr & Griffin, 2013:134).	A deductive process whereby the researcher focusses on the testing of a theory or the seeking of the causality among the data in order to move from a general to a specific situation or to derived objective and replicable results from the data (De Villiers, 2015:30). The results in quantitative research are independent on the researcher and different researchers may obtain the same results (Sue, 2008:16; Zikmund *et al*., 2013:135).	Analysing data both qualitative and quantitative by answering research questions or hypotheses and the use of quantitative statistical software (Creswell & Plano Clark 2011:203 - 205)

Source: Own research

Comparing the different research methods in Table 5-1, the researcher is in agreement with Williams (2007:65); Creswell (2009:3); Castellan (2010:2); Devetak *et al*. (2010:77) by concluding that none of the methods is better than the other; but the choice depends on the nature, purpose, research question, and type of data needed in the study. This study's purpose is outlined in (Section 1.3, page 6) as the development of an integrated financial decision-making model using lean accounting principles that will influence stakeholders' decision-making abilities. Referring back to Table 5-1 and (Section 5.3.1, page 101) a qualitative research method appears to be the most suitable for this study. After making this important decision; some consideration needed to be given to the techniques that will collect and analyse the data.

5.4 Research methodology applicable to the study

The significance of both the research design and methods have been analysed that led to the necessity of exploring alternative research methodologies. The choice of methodology is influenced by the researcher's beliefs, perspectives and attitudes. This section explains the grounded theory and case study methodologies in some detail in order to summarise the motivation for using it in the study.

5.4.1 Grounded theory

Smith (2011:22) proposes grounded theory as an inductive method in accounting research. Grounded theory is the development of theory through analysing data and the constant testing of this theory using theoretical sampled empirical data (Smith, 2011:141; De Villiers, 2015:40-41). Glaser and Struass (1967:3) are of the opinion that "*theory that inductively develops out of systematic empirical research is more likely to fit the data and is therefore more likely to be useful, plausible and accessible*". Smith (2011:141), Evans and Liverpoll (2013:37) regard pure grounded theory as a non-qualitative method that manages and control potential prejudice by developing theory from empirical data. Maree (2012:77); Delport *et al*. (2013:318) and McKerchar (2008:15) explain that grounded theory attempts to formulate a collective theory that is formulated by opinions that are based on two principles namely; constant comparison and theoretical sampling (McKerchar, 2008:15; Smith, 2011:141; Maree, 2012:77; Delport *et al*., 2013:318). Strauss and Corbin (1998:12) assess grounded theory as suitable for; gaining insight, deepening the understanding of data, and guiding action. Dopuch and Gupta (1994), Kloot and Martin (2000), Marriott and Marriott (2000), Malmi

and Granlund (2009), Melnyk, Bititci, Platts, Tobias and Andersen (2013); used grounded theory in management accounting studies. Smith (2011:141) and Maree (2012:77) deduce that in accounting, grounded theory has become a preferred qualitative approach. It should be noted that there are two distinctly developed alternative grounded theory approaches namely; Glaserian- and the Straussian approach.

These two approaches emanate from differences between Glaser and Strauss on theoretical and philological assumptions (Howard-Payne, 2015:52). The Glaserian approach is the basic Glaser and Struass (1967) approach, accentuating an individual and personal approach, and according to Howard-Payne (2015:52), function within a post-positive paradigm. The Straussian approach developed by Strauss and Gorbin (1998) is more structured and prescriptive, adopting a constructivist approach (Howard-Payne, 2015:52), making it more suitable for positivism.

From the previous sections it is eminent that the two approaches have fundamental and philosophical differences. Therefore, understanding the epistemological and ontological foundations of the Glaserian and Straussian are important in order to select a method best suited to the researcher's philosophical perspective (Kuhlmann, 2013:41; Howard-Payne, 2015:52). Howard-Payne (2015:51) argues that it is important for the researcher to consider the six argumentative differences between the Glaserian and Straussian approaches as it provides the rationale for selecting an approach to a study. Table 5-2 provides a summary of the argumentative differences between the Glaserian and Straussian approaches.

Table 5-2: Argumentative differences between the Glaserian and Straussian approaches

Argumentative difference	Glaserian approach	Straussian approach
Ontological perspective	*Critical realism* – a theory developed from the actual data, as the theory truly resides in the data.	*Pragmatic realism* – the truth is limited to the established harmony between multiple views regarding a phenomenon in a particular period.
Epistemological perspective	The findings are deemed to be revealed from within the data.	The results are created by the prejudiced interpretations of the phenomenon being studied.
Researcher's function	Researcher is an observer.	Researcher is personally involved in the research.
Literature review	*Emergent conceptual design* – literature review only conducted post data analysis.	*Predetermined paradigm design* – whereby the researcher has prior knowledge that will influence the theoretically informed assumptions.
Formulating the research question	Prohibit the researcher from entering the research field with any pre-set research question.	The researcher can and should initiate the study with a predetermined research question in mind, arising from a preliminary literature review.

Table 5-2: Argumentative differences between the Glaserian and Straussian approaches (continued)

Argumentative difference	Glaserian approach	Straussian approach
Data coding and analysis	• *Preliminary coding of data* – using comparison of occurrences with each other to reveal patterns and trends. • *Axial coding* – not used • *Theoretical* – refitting and refinement of categories that integrates around the emerging core.	• *Preliminary coding of data* – open coding practice • *Axial coding* – inclusion • *Selective coding* - detailing the development, selection of core and integration of categories.
Verification of emerging theory	Verification of emerging theory can only be done by quantitative analysis.	Verification of the theory came through constant comparison and the capturing of multiple perspectives from a specific period and culture.

Source: Own research

From Table 5-2 the fundamental difference between the Glaserian and Straussian grounded theory is quite eminent. Howard-Payne (2015:53) concludes the epistemological attitude is reliant on the pragmatic relationship between the observer and what is being observed. In constructing Table 5-2 the selection of the particular approach to the proposed grounded theory study became clear. Grounded theory research is dependent on both the researcher and the subject (Laughlin, 1995:67; Parker & Roffey, 1997:263). The basic features of Struassian grounded theory includes; analytical processes, linking issues with phenomenon that allow the generation of subjective theory that provides a meaningful guide, that provides a contribution to the body of knowledge applying comparative, systematic and concurrent data collection.

This study made use of the Straussian grounded theory approach as it best suits the researcher‘s philosophical perspective. The Straussian grounded theory is used to empirically investigate financial decision-making models in order to develop an integrated financial decision-making model using lean accounting principles. This is in agreement with McGhee, Marland and Atkinson’s (2007:339) argument that Straussian grounded theory researchers use historical evidence, experience and existing theoretical knowledge to analyse and interpret data to generate novel theory. Novel theory is produced with the help of the case study approach (Eisenhardt, 1989:542; Ellram, 1996:114).

5.4.2 Case study

Rule and John (2011:4) identify a case study as a familiar approach in social science while Maree (2012:75) regards it as the application in both positivist and interpretivist research paradigms. McKerchar (2008:14), Kumar (2014:155) and De Villiers (2015:42) define a case study as a framework that investigates a phenomenon. The investigation is done through a variety of data collection techniques. O’Rourke (2005:40), Martinez-Jurado and Moyama-Fuentes (2012:334), Delport *et al*. (2013:321) identified the following techniques; interviews, documents, simulations and observations. Some consideration must be given to the two kinds of case studies; deductive and the inductive. Delport *et al*. (2013:321) scribe that the deductive (descriptive) case study is designed to describe, analyse and interpret a specific phenomenon; Eisenhardt and Graebner (2007:26) refer to this as theory testing. Rule and John (2011:8) argue that an inductive case study aims to build theory; Eisenhardt and Graebner (2007:26) refer to this as theory building.

Eisenhardt and Graebner (2007:26) argue that the need of empirical findings, grounded in literature is to identify the gap and to formulate the research question. However, Eisenhardt and Graebner (2007:26) further suggest that if theory building emanates from case study research, the researcher must justify why the research question is better answered by theory building rather than theory testing. Siggelkow (2007:23) agrees with Eisenhardt and Graebner (2007:26) that the research needs to focus on the conceptual argument using storytelling and illustrations. Siggelkow (2007:20) differentiate case study research from other forms of research in the fact that it does not need to mention the recourse statement of "*results are significant a* $p < 0,05$". Siggelkow (2007:21) distinguishes three reasons; motivation, inspiration and illustration when explaining the use of case study research.

Using case study research to motivate the research question, the researcher needs to develop the conceptual argument to explain the importance of the phenomenon. Obtaining data from case study research inspire new ideas that can prompt theory building. Section 5.2.2 (page 99) states the goal of inductive research is the generation of theory, case study research satisfies this goal. Siggelkow (2007:22) explains that if limited theoretical knowledge about a phenomenon exists, inductive research provides the data that is the starting point of the emerging theory. The researcher can further use an illustration in a case study to conceptualise the new theory's contribution.

Eisenhardt *et al*. (2016:1113) assess that researchers' attempt to generate or build theory using data are known as inductive research. Furthermore, Eisenhardt *et al*. (2016:1114) highlight that blending grounded theory and case study research are used in both deductive as well as inductive research. The main objective of inductive research is the emergence of theory from data. This objective is in contrast with deductive and statistically-based research methods. These methods start with a hypothesis and are tested with data. Eisenhardt *et al*. (2016:1114) indicate that some studies include multiple case studies that aim to explain the variance of the findings that emphasise the underlying theoretical logic. Srinidhi (1992), De Haas and Kleingeld (1999), McNair, Polutnik and Silvi (2001), De Haas and Algera (2002), Rouse, Putterill and Ryan (2002), Ratnatunga, Gray and Balachandran (2004); have successfully used case studies to study various management accounting issues.

5.4.3 Summary

The study combined grounded theory with multiple case study methods. Knipper (2010:14-15) argues that both these methods are excellent methods to use when not much is known about the antecedents. The literature study revealed that although much research has been done on financial decision-making models, international financial reporting, integrated reports and lean accounting none of the previous studies integrated all these elements. Therefore making use of grounded theory combined with multiple case study methods affords the opportunity to begin research within a study field rather than with a theory. As stated previously, the literature did not identify any theories that integrate financial decision-making models with lean accounting principles. Using grounded theory the researcher was able to create new theory as it emerged. Yin (2003:158) demonstrates that a theory is developed from *a priory* in case study research. Charmaz (2001:675-694) argues that grounded theory is ideal because the research can be performed in a natural setting and constant comparisons and additional interrogations can be conducted if necessary. Eisenhardt (1989:542) proves that the case study method is useful to identify the sample up-front, providing a means to reconcile evidence and collecting data across cases.

Knipper (2010:15) explains that the case study method also allows for cross-case comparison of selected sample companies. The aim of the study was to develop and build theory in the establishment of an integrated financial decision-making model using lean accounting principles using both the grounded theory and case study methods. The next section clarifies the data collection process of the study.

5.5 Data collection

When deciding on the appropriate method of data collection the nature of the research questions, objectives and methodology were considered. Castellan (2010:7) and Creswell (2014:234) scribe that case studies and documents are useful and reliable data collection methods. Bowen (2009:27) supported by Birks and Mills (2014:37) identifies printed documents (textbooks, scholarly articles, popular press, survey data results, maps, advertisement, charts and reports) and audio-visual documents. Reports include both financial and non-financial reports. Data was collected from multiple sources ensuring the reliability of the findings. The sample and unit of analysis represent both a purposeful and a convenience sample. This becomes evident as the main methods of data collection in this study are discussed next.

5.5.1 Data collected in this study

The intention of grounded theory is to generate a new substantive theory grounded in data to provide an invigorating view on existing knowledge (Boadu & Sorour, 2015:148). Furthermore, Boadu and Sorour (2015:148) support the studies of Strauss and Corbin (1990) as well as Glaser (2001) by concluding that emerging theory reveals a contextual explanation of a phenomenon. Locke (2001:95) deduces that grounded theory is a suitable to research managerial behaviour as it captures the complexity of the managerial process. If it captures the complexity of the managerial process it would be suitable to develop an integrated financial decision-making model using lean accounting principles.

Knipper (2010:72) explains it is important that the sample and the unit of analysis were purposefully and conveniently sampled. The grounded theory and a multiple case study sample in this research consisted of three integrated energy companies. It is important to note that although the information is publically available the results are reported collectively to determine the phenomenon and not individually. The data collected consist mainly out of analysing secondary sources and making use of documentary reviews. Bowen (2009:37) demonstrates that the following should be contemplated in the selection of documents: 1) contribution towards the objectives of the study; 2) authenticity, credibility accuracy, and representativeness; 3) originality and purpose; and 4) the source of the document. Creswell (2014:241) presents the following advantage of using documents to collect data: 1) the researcher access the data at a convenient time, 2) data is collected from sources that are well-known to the researcher, and 3) the text nature of the data saves the time and expenses required to put it into written form.

The documents for the analysis in this study were the 2014, 2015 and 2016 Annual Reports (BP, 2014; BP, 2015; BP; 2016; Chevron, 2014; Chevron, 2015; Chevron, 2016; Sasol, 2014; Sasol, 2015; Sasol, 2016). The annual reports contains a full analysis of the group's financial results, with detailed financial statements, full corporate governance and remuneration reports, prepared in accordance with International Financial Reporting Standards. The decision to use the 2014, 2015 and 2016 Annual Reports of BP, Chevron and Sasol were deemed appropriate because it fulfils the criteria for selecting documents as argued by Bowen (2009:37). The population presents the target population for this study and are discussed next.

5.5.1.1 Population

The population is the complete (Zikmund *et al*., 2013:385) or parent (Lewis & Richie, 2003:86) group (Babbie, 2013:134), a collection of all the observations of a study that share the same characteristics (McMillan, 1996:85; Brynard, Hanekom & Brynard, 2014:57) or attributes (Zikmund *et al*., 2013:385) from which the sample is selected (Lewis & Richie, 2003:86; Babbie, 2013:134) on which a generalised (McMillan, 1996:85) conclusion is drawn. The complete group that share the same characteristics and attributes that the researcher wants to study and concludes on is known as the population.

The target population of this study consists of all listed companies on three stock exchanges. The three stock exchanges were; JSE, NYSE and LSE. This was done in order to determine whether different accounting standards will influence the developed integrated financial decision-making model using lean accounting principles. The researcher is confident that IFRS, UK GAAP, and USA GAAP provided an appropriated basis to conduct multiple case studies in testing and modifying, theoretical propositions constructed from prior literature studies in order to create theory from the phenomenon. It needs to be stated that the objective of both grounded theory research and multiple case study research is not to test relationships among variables but rather to discover relevant categories. The next subsection considers the sampling method that was used to determine the selected companies used in the multiple case study.

5.5.1.2 Sampling

Not all the observation of the population was studied in detail due to limited resources, money and time as well as the possibility of unit destruction (Emmel, 2013:48). Sampling is a technique (Brynard *et al*., 2014:56) that use a sub-set, smaller part (Zikmund *et al*., 2013:385), reprehension (McMillan, 1996:86; Adams, Khan, Reaside & White, 2009:96) of the population from which observations are made in order to drawn generalised conclusions (Zikmund *et al*., 2013:66). Sampling techniques are divided into probability, all observations from the population have an equal opportunity to be included in the sample (Welman *et al*., 2005:56) or non-probability sampling methods where not all the observations have a chance of being included in the sample (McMillan, 1996:86).

Welman and Kruger (1999:52-63) explain that simple random, stratified random, systematic and cluster sampling are four types of probability sampling methods, while non-probability methods consist of accidental or incidental (most convenience), quota (same proportions), purposive (using experience, ingenuity and or previous research findings), and snowball sampling. This study applied non-probability, convenience and quota sampling methods. The sample of the study consisted of BP p.l.c., Chevron Corporation and Sasol Limited. The three companies were selected due to the similarity of the industry in which they operate, although the accounting policies differ. Efforts were made to find companies in similar industries that reports financial statements in terms of 1) International Financial Reporting Standards (IFRS), 2) Generally Accepted Accounting Principles (United Kingdom) (UK GAAP), and 3) Generally Accepted Accounting Principles (United States) (US GAAP).

BP p.l.c. (BP) is the parent company of the BP group of companies. The company was incorporated in 1909 in England and Wales and changed its name to BP p.l.c. in 2001. BP p.l.c. prepares financial statements in accordance with United Kingdom law, UK Companies Act 2006 and United Kingdom accounting standards (United Kingdom generally accepted accounting practice) using International Federation of Accountants (IFRS) as adopted by the European Union (EU). Chevron Corporation (Chevron) listed on the New York Stock Exchange (NYSE) and was originally incorporated in San Francisco, California, as the Pacific Coast Oil Company in 1879. Financial statements are prepared in accordance with accounting principles generally accepted in the United States of America (US GAAP) and the Securities and Exchange Commission's rules and forms. Sasol Limited (Sasol), the ultimate holding company of the group, is incorporated and domiciled in the Republic of South Africa and was listed on the JSE Limited (JSE) on 31 October 1979 and on the NYSE on 9 April 2003. The incorporation and domicile in the Republic of South Africa of Sasol Limited requires the company to comply with the relevant provisions of the South African Companies Act, International Financial Reporting Standards (IFRS) and Interpretations of IFRS as issued by the International Accounting Standards Board (IASB).

5.5.2 Identifying the participating companies

In Chapter 2 (Section 2.3, page 20) it was noted that due to an increase in international trade the accounting profession also needed to adapt to globalisation. The accounting profession needs to record and disclose reliable and consistent accounting information

that is useful and can be evaluated by all stakeholders in making decisions. Section 2.3.2 (page 24) explains that accounting internationalisation and convergence of accounting standards are critical issues in accounting research. In light of the previous, any accounting research paper should at least consider how different countries are applying different accounting standards. In the development of an integrated financial decision-making model using lean accounting principles the researcher took the view that the model should be developed using companies in the same industry but that apply different accounting standards.

Three companies within the energy producing sector were documented and analysed. The data collection took place during this phase. The documents of the three companies that were coded and analysed included the annual financial reports (BP, 2014; BP, 2015; BP; 2016; Chevron, 2014; Chevron, 2015; Chevron, 2016; Sasol, 2014; Sasol, 2015; Sasol, 2016) and the integrated reports (BP, 2014; BP, 2015; BP; 2016; Chevron, 2014; Chevron, 2015; Chevron, 2016; Sasol, 2014; Sasol, 2015; Sasol, 2016). Copious notes were made of each of the companies' annual financial and integrated reports. The notes were used to augment the coding of the annual financial and integrated reports. In doing this the annual financial, integrated reports and notes were used to triangulate data to support the findings, propositions and conclusions of the study.

The three companies selected in the sample are stratified based on an attempt by the researcher to include companies in the same industry that is also well-known. The sampling was further based on convenience, and all three companies are listed companies and each uses a different accounting reporting standard. The data are accessible, reliable and authentic. Table 5-3 provides the demographical information about the participating companies, current financial year (2015).

Table 5-3: Company demographics

Company Demographics Detail	Sasol C1	Page	Chevron C2	Page	BP p.l.c C3	Page
Registered name	Sasol Ltd Group		Chevron Corporation		BP p.l.c	
Country of registration	South Africa	C	USA	C	England & Wales	ii
Listed	JSE	C	NYSE	C	LSE	ii
Accounting requirements	IFRS	74	USA GAAP	36	IFRS and UK GAAP	170
Year ends	30-Jun		31-Dec		31-Dec	
Domiciled	RSA		USA		England & Wales	
Currency	ZAR	74	USD	38	USD	106
Government intervention	BEE	87	Non-reported		Non-reported	
Financial year	2015		2015		2015	
Turnover – US$ m	$16 181 000 000	97	$129 925 000 000	31	$222 894 000 000	103
Ordinary shares – Issued	679 480 362	178	2 442 676 580	33	20 108 771 000	155
Earnings per share (EPS)						
Basic	**$4.25**	**97**	**$2.46**	**45**	**$35.39**	**131**
Diluted	**$4.25**	**97**	**$2.45**	**45**	**$35.39**	**131**

Source(s): BP, 2015; Chevron, 2015; Sasol, 2015

Table 5-3, indicates that although the three companies operate within the same industry, there are major differences between the companies. These differences need to be considered when interpreting the results and drawing conclusions. The revenue base is very substantive, C1=$16 181m, C2=$129 925m, and C3=$222 894m. C3's turnover is almost 14 times that of C1 and almost doubled that of C2.

Two of the company's year ends are in December, however, all three companies have year ends in winter. Although C1 report in ZAR, it is also policy to disclose the statement of financial position and financial performance in USD, which made the comparison of the three relatively effortless as it did not require any complicated foreign exchange conversion. C3 seems to be the flagship company being the biggest of the three analysed companies with also the highest basic and diluted earnings per share (EPS) ($35,39 and $35,39), which is circa 730% more than that of C1 and C2. The employment cost and number of employees also substantiate the fact of C3 being the biggest company by far.

An interesting observation to point out is the fact that all three companies issue their annual reports in accordance with the US Securities Exchange Act of 1934, even though; C1 is a JSE-listed company using IFRS requirements and C3 is a LSE-listed company adheres to IFRS and UK GAAP requirements. The demographics suggest differences; however, the similarities in terms of industry and issuing of annual reports make them relevant to this study. It is not necessary to make cross industry adjustments in order to consider the financial statements. The data editing, coding and analysis for this study are presented next.

5.5.3 Data editing

The three companies in the energy producing industry were selected due to their similarity, yet differentiated financial reporting standards. The financial statements of the companies are prepared in terms of; 1) IFRS, 2) UK GAAP, and 3) US GAAP. In the initial phase of the research, the researcher attempted to construct an integrated financial decision-making model using the information that companies published annual financial and integrated reports. Ideally it would be preferable to develop one complete integrated financial decision-making model using external and internal reports to examine the influence of external reporting standards on internal reporting requirements. However, this was not entirely possible, even though annual financial

statements and integrated reports are publicly available companies will not disclose or discuss internal reports. Therefore a piecemeal approach, as suggested by Knipper (2010:87) was applied in the identification of financial decision-making requirements.

The researcher edited the data set to best fit the emerging themes identified from the literature study with the information discovered from the three independent case studies. This meant that the study was limited to the comparative data that were obtained from the three case studies. Prior to the case study, financial decision-making models was identified and classified as: 1) financial performance indicators, 2) risk indicators, 3) growth indicators, and 4) non-financial indicators. Based on the information discovered during the literature study of lean accounting principles the financial decision-making model was reclassified to include; 1) operational indicators, 2) capacity indicators, 3) financial indicators, and 4) non-financial indicators.

The data were coded as far as possible for analysis purposes. Once the data were edited and coded the data analysis was concluded.

5.5.4 Coding

Coding, in general, is the process of reading cautiously through the transcribed data and separating all the data into meaningful themes (Maree, 2012:105). The information that was collected from the documents were summarised and coded. The coding was used to analyse and examine themes, patterns, and categories that emerged within and across the three integrated energy companies. Miles and Huberman (1994:261) assert that general themes should be identified from the literature study, while more themes are added as the research develops. Ritchie and Spencer (1994:137) differentiate qualitative data analysis using coding as the process of detecting, defining, categorising, identifying, explaining, and mapping of the categories and relationships of emerged theory.

The data collected were coded using the Straussian grounded theory approach as discussed in Section 5.4.1, page 105. The coding was done based on the data collected and not determined prior to the analysis. The codes used in this study for analysing purposes are a hybrid of that which was collected through the literature review and that which was collected through the document analysis.

The literature of the development of accounting standards, decision usefulness of accounting information, decision-making and lean accounting principles provided the key concepts that would most likely be investigated during the open coding analysis. Many key concepts were identified and it was determined that there are too a large number to make a valuable contribution in the axial coding step in order to try and determine a phenomenon. To streamline the approach the categories were reduced to only identify the key concepts that would most likely be used by stakeholders in financial decision-making models to analyse the annual financial statements and integrated reports.

This led to the development of a financial decision-making framework that included four broad categories. Each of the broad categories were further analysed to included subcategories, making the framework comprehensive. The subcategories were conceptualised and grouped for analysis. The subcategories represent general concepts of financial decision-making models and remain consistent with what was discussed in the literature review about the decision-usefulness objective of financial accounting in Chapter 2. The next step was then to develop a coding system that could be used to interpret the document analysis. The study followed the coding procedures discussed by Boadu and Sorour (2015:150) that includes three steps namely; open coding, axial coding, and selective coding. Each of the steps are discussed in detail and how it relates to the study.

5.5.4.1 Open coding

Strauss and Corbin (1998:102) defines open coding as the process that dissects data to determine different categories that will help the researcher to examine, compare and conceptualise the similarities and differences, this sentiment is shared by Knipper (2010:72). Boadu and Sorour (2015:150) argue that open coding is the process that exposes data and uncovers emerging categories.

During the open coding phase, a priori coding system was developed. Strauss (1987:91) suggests that the conceptualising of categories should include grouping and collapsing. The developed coding system included seven main emerging categories, which each grouped them into subcategories. The seven main emerging categories were summarised in Table 5-4. Depicting the codes assigned to each of the four financial decision-making indicator categories and what is measure by it.

Table 5-4: Open coding

Financial Performance Measures – Traditional accounting-based financial performance measures		
FP-AFP-ROA	Return on assets	Measure profitability, considering the effective use of assets.
FP-AFP-ROE	Return on equity	Measure profitability on shareholders' investment.
FP-AFP-EPS	Earnings per share	Calculate company's strength, important in determining share price.
FP-AFP-P/E	Price earnings ratio	How long it will take to recover investment.
Financial Performance Measures –Modern value-based financial performance measures		
FP-VFP-EVA	Economic value added	Measure long-term profitability using economic profit and cost of capital
FP-VFP-MVA	Market value added	Measure increase shareholders wealth
FP-VFP-CFROI	Cash flow return on investment	Measure real cash return on capital invested
FP-VFP-CVAi	Cash value added	Measure long-term profitability using real economic profit and cost of capital
Financial Risk Indicators – Capital Sensitivity: Solvability		
FR-CS-SO-TSITA	Total Shareholders' interest to total assets	Percentage of assets financed by shareholders’ funds
FR-CS-SO-TATL	Total assets to total liabilities	Ability to meet long-term commitments
FR-CS-SO-ESTI	Equity to total shareholders' interest	The risk for potential investors, considering own capital in financing structure.
FR-CS-SO-D/E	Debt/Equity ratio	The extent of how much external financing is used.
FR-CS-SO-SHI	Shareholders' interest	The relationship between external financing and shareholders' interest.

Table 5-4: Open coding (continued)

Financial Risk Indicators – Capital Sensitivity: Liquidity		
FR-CS-LQ-CR	Current ratio	Calculate ability to pay short-term debt as and when become due.
FR-CS-LQ-QR	Quick ratio	Eliminates inventory in calculating ability to pay short-term debt as and when become due.
FR-CS-LQ-NIWC	Net investment in working capital	Working capital requirements to maintain current level of operations.
FR-CS-LQ-DCP	Debtors collection period	The average time the debtors take to repay accounts.
FR-CS-LQ-CPP	Creditors payment period	Average time it takes for the company to repay creditors.
FR-CS-LQ-IT	Inventory turnover	Number of time the company will sell out all inventory.
Financial Risk Indicators - Income Sensitivity: Liquidity		
FR-IS-SM	Safety margin ratio	The amount by which the sales can reduce before making losses.
FR-IS-IC	Interest cover	Extent by which earnings can decrease before interest payments cannot be met.
FR-IS-PDC	Preference dividend cover	Extent to which preference dividends are covered.
FR-IS-ODC	Ordinary dividend cover	Extent to which ordinary dividends are covered.
FR-IS-FCC	Fixed charged cover	Ability of the company to cover the financing and other fixed charges commitments.
Growth indicators		
GI-GIS	Growth in sales	The growth of sales revenue over financial years.
GI-GIE	Growth in earnings	Growth in earnings of interest to majority shareholders.
GI-GID	Growth in dividends	Influence the sustainability of company's growth.
GI-GINAV	Growth in net asset value	Considering the growth in net assets using the accounting book values.
GI-CGR	Critical growth rate	The growth rate to sustain the company.
GI-FRTFG	Funds required to finance growth	Indication of funds required ensuring sales growth will not be effected by cash shortages.

Table 5-4: Open coding (continued)

Non-Financial Indicators	
NF-Pol	Political factors
NF-Econ	Economic climate
NF-Soc	Sociological background
NF-Tech Adv	Technological advancement
NF-Fis Pol	Fiscal policy
NF-Ind Trends	Industry trends
NF-Lab	Labour relations
NF-Leg	Legal factors

Source: Own research

Table 5-4 indicates how the seven (n=7) decision-making categories and the 38 subcategories were each assigned a code. In each of the n=38 instances these codes were assigned to a measure as identified by the literature study. These measures are some of the most used measures according to the literature study that were discussed in Chapter 3. Only these were used for coding purposes.

Open coding was done by allocating a unique code to each of the measures by grouping them into the four (n=4) individual financial decision-making indicator groups, namely financial performance measures, financial risk, growth, and non-financial factors. The first two letters of the code indicates the main financial decision-making indicator, as an example, FP indicates that all these codes form part of financial performance measures. FR is an indicator of financial risk, GI highlight growth while non-financial factors (NF) explain the non-financial indicators. Glaser and Struass (1998:119) suggested step 1 procedure, the open coding process identified the individual coding categories that would be used in the study. The researcher was able to determine the relationships between the categories and the uniqueness of the different cases by applying this procedure. This was greatly facilitated by the use of Microsoft Excel spread sheets where each coding category could be investigated and the results be printed out and analysed. This was mainly a manual effort, whereby key differences, characteristics and dimensions were identified that will be discussed next.

Financial performance measures included two primary dimensions. The two dimensions are; traditional accounting-based financial performance measures (AFP) and modern value-based financial performance measures (VFP). AFP identified four categories of testing financial performance. These measures can be categorised to determine profitability based on; the effective utilisation of assets, shareholders' investment, the strength of the company that will determine the share price and the time it will take to recover the investment. VFP measures financial performance through long-term profitability, an increase in shareholders wealth, real cash return, and real economic profit.

Financial decision makers also need to consider financial risk indicators, which covers the two sensitivity dimensions of; capital and income. Capital sensitivity (CS) furthermore analyse solvability (SO) and liquidity (LQ). SO are the long-term financing issues and comprise five categories. The five categories range from determining the finance of assets by shareholders, ability to meet long-term commitments, financing

structure, extend of external financing and the relationship between own and external financing. LQ on the other hand considers the company's ability to pay short-term debt as and when it becomes due. Six different ratios are used to determine company's liquidity and are categorised as follows; current ratio, quick ratio, net investment in working capital, debtors collection period, creditors payment period (CPP) and inventory turnover. Income sensitivity (IS) also indicates the financial risk of the company.

IS demonstrates the antecedent being influenced by change in income. Five subcategories were analysed to determine the IS namely; the amount by which the sales can reduce before making losses, the extent by which earnings can decrease before interest payments cannot be met, the extent to which preference dividends and ordinary dividends are covered and what are the ability of the company to cover the finance and other fixed charges commitments. The third main financial decision-making indicator categories measure growth. Six growth indicators were identified namely; growth in sales, growth in earnings, growth in dividends, and growth in net asset value, critical growth rate and the funds required financing growth.

The non-financial indicators (NF) include nine dimensions, these dimensions impact financial decision-making and are of the same importance as the financial indicators. NF indicators form the qualitative decision-making indicators include these nine dimensions: political, economic, sociological, technological, environmental, legal requirements, fiscal policies, labour relations and industry trends. Financial decisions cannot be made in isolation and NF indicators need to be included. It can be concluded that financial decisions are influenced by four main financial decision-making categories that includes both financial and non-financial indicators.

Finally the category of lean accounting principles needed to be included as part of the open coding. Maskell and Baggaley (2006:35) supported by Bahadir (2011:23) outline lean accounting's objectives as: 1] providing accurate, understandable and timeous information useful for decision-making; 2] equipping and motivating people to embrace a lean culture within the company; 3] employing lean methods in abolishing waste in the company; and 4] adhering to the accounting standards that prevail. Lean accounting principles that are conducive to achieve these objectives are summarised in Table 5-5. The final step in the study's open coding phase was to provide the summary that includes the coding, lean accounting principles, description and finally the tool that was used.

Table 5-5: Lean accounting principles applied in the study

Code	Lean accounting principles	Description	Tool
LAP-VSM	Value stream management (VSM)	VSM is a visual representation of the company's value- and non-value-added activities in order to produce the final product for the customer. Abdulmalek and Rajgopal (2007:224-226) aims to eliminate waste (Ahasan, Nazmul, & Bony, 2013:587) while increasing efficiency (Chakrabortty & Sanjoy, 2010:13).	Value stream reporting
LAP-VM	Visual management (VM)	Maskell and Kennedy (2007:65) assess VM as a method by which information can be tract throughout the value stream, which will influence the decision-making usefulness for all stakeholders (Bahadir, 2011:23) by visualising the financial and non-financial influences of the lean improvements (Woehrle & Abou-Shady, 2010:72).	Performance measures and box score
LAP-CImp	Continuous improvement (Cimp)	Ofileanu and Topor (2014:348) conclude that VSM and VM identify the wasteful and non-value added activities that are addressed through a process of continuous improvement.	Kaizen

Source: Own research

Table 5-5 supplied the researcher with valuable information on what lean accounting principles need to be included in and integrated financial decision-making model. Table 5-5 supply the evidence that by using value streams value and non-value added activities can be identified and managed that is helpful to eliminate waste and increase efficiency. Box reports provide useful information to all stakeholders visually that can be used for financial decision-making purposes while continuous improvement make future improvements possible.

In order to compile an integrated financial decision-making model these open coding data need to be axial coded. Effectively, these dimensions may assist in the quantitative analysis of integrated financial decision-making model studies in the future. These dimensions serve as the framework for the propositions that can be operationalised for hypothesis testing in future research and by using statistical analysis. The next step of the grounded theory process was the axial coding of the categories. Effectively, the relationships between the categories are established prior to the final step of selective coding. The following subsection discusses the axial coding procedure.

5.5.4.2 Axial coding

Axial coding is the process of reassembling the data that were dissected during open coding (Strauss & Corbin, 1998:124). Strauss and Corbin (1998:124) defined axial coding as the data analysis process whereby data are reassembled to highlight the linkages between the various categories of the grounded theory. Furthermore, Strauss and Corbin (1998:124) illustrates that in this process of coding and analysis the researcher endeavours to reassemble the data through the use of a paradigm model, constituting the phenomenon, its conditions, framework, effects and action interface stratagem (Delport *et al*., 2013:412; Heath & Cowley, 2004:146). Boadu and Sorour (2015:152) discuss how open codes are being grouped into categories and sub-categories.

The seven emerging categories with their subcategories that were determined in the open-coding phase were examined and manipulated during the axial coding phase. This examination and manipulation led to the developing of four financial decision-making indicators. The four financial decision-making indicators are; 1) operational indicators (OI), 2) capacity indicators (CI), 3) financial indicators (FI), and 4) non-financial indicators (NF). Each of these indicators have subcategories that emanates from open

coding, which have an intersecting or causal relationship with each other. Table 5-6 summarises the axial coding of the four categories and subcategories.

Table 5-6: Axial coding

Element	Level
Financial Performance Measures – Traditional accounting-based financial performance measures	
Return on Assets	Capacity
Return on Equity	Financial
Earnings per Share	Financial
Price earnings ratio	Financial
Financial Performance Measures – Modern value-based financial performance measures	
Economic Value Added	Financial
Market Value Added	Financial
Cash Flow Return on Investment	Financial
Cash Value Added	Financial
Financial Risk Indicators – Capital Sensitivity: Solvability	
Total Shareholders 'interest to Total Assets	Operating
Total Assets to Total Liabilities	Operating
Equity to Total Shareholders' Interest	Operating
Debt/Equity ratio	Operating
Shareholders' Interest	Operating
Financial Risk Indicators – Capital sensitivity: Liquidity	
Current ratio	Operating
Quick ratio	Operating
Net investment in working capital	Operating
Debtors collection period	Operating
Creditors payment period	Operating
Inventory turnover	Operating

Table 5-6: Axial coding (continued)

Element	Level
Financial Risk Indicators – Income sensitivity	
Safety Margin Ratio	Capacity
Interest cover	Capacity
Preference dividend cover	Capacity
Ordinary dividend cover	Capacity
Fixed charged cover	Capacity
Growth indicators	
Growth in sales	Capacity
Growth in earnings	Financial
Growth in dividends	Capacity
Growth in net asset value	Financial
Critical growth rate	Operating
Funds required to finance growth	Operating
Non-financial indicators	
Political factors	Capacity
Economic climate	Capacity
Sociological background	Capacity
Technological advancement	Capacity
Fiscal policy	Capacity
Industry trends	Operating
Labour relations	Operating
Legal factors	Capacity
Environmental factors	Capacity

Source: Own research

In context of the theoretical model Table 5-6 illustrates the financial decision-making indicators and how the subcategories relate to them. These indicators were visually determined by considering decision-making motives, non-financial indicators and lean accounting principles and their ability to influence financial decisions. Further investigation to lean principles also brought about various methods to implement an integrated decision-making model. The conceptual model and the discussion that appears in Chapter 6 presented some strategies that can be used in an integrated decision-making model. The four categories are OI, CI, FI, and NF that represent the emerging categories of the grounded theory to this point, depicting the grounded theory of financial decision-making models. At this point the researcher selectively coded data in order to construct an integrated financial decision-making model using lean

accounting principles. It is now necessary to consider the final coding procedure by using grounded theory.

5.5.4.3 Selective coding

Selective coding is the final step in the coding process. Boadu and Sorour (2015:153) define selective coding as; *the integration, interpretation, and refinement of the major;* core (Howell, 2000:184); "*categories and sub-categories to form a story line that describe what happened in the phenomenon*". Knipper (2010:75) explains that during the selective coding phase of the conceptual model the illustrated relationships were identified and these relationships were validated or invalidated in accordance with the data. Where more data required proofing the relationship additional theoretical sampling was done. Delport *et al*. (2013:413) and McKerchar (2008:16) conclude that it may be necessary to alternate between the three steps in order to validate and develop and refine the conceptual model.

The conceptual financial decision-making model using lean accounting principles and its impact is presented by the selective coding phase. Much of the validation was conducted during the axial coding step. The building of the conceptual model was the outcome of selective coding that was performed simultaneously with the case study analysis. This included the identification of the characteristics of the individual companies.

From the axial coding phase it became evident that four core categories (OI, CI, FI, and NF) are required in the development of the conceptual model. The selective coding represents the fusion of grounded theory and case study relating to the conditions and differences encountered in the core categories that form the basis for theory building and generating research propositions. Table 5-7 below is the result of the selective coding, indicating the code, element and performance area.

Table 5-7: Selective coding

Code	Element	Performance evaluation areas
FR-CS-LQ-CPP	Creditors payment period	Operating
FR-CS-LQ-CR	Current ratio	Operating
FR-CS-LQ-DCP	Debtors collection period	Operating
FR-CS-LQ-IT	Inventory turnover	Operating
FR-CS-LQ-NIWC	Net investment in working capital	Operating
FR-CS-LQ-QR	Quick ratio	Operating
FR-CS-SO-D/E	Debt/Equity ratio	Operating
FR-CS-SO-ESTI	Equity to total shareholders' interest	Operating
FR-CS-SO-SHI	Shareholders' interest	Operating
FR-CS-SO-TATL	Total Assets to Total Liabilities	Operating
FR-CS-SO-TSITA	Total Shareholders’ interest to Total Assets	Operating
GI-CGR	Critical growth rate	Operating
GI-FRTFG	Funds required to finance growth	Operating
NF-Ind Trends	Industry trends	Operating
NF-Lab	Labour relations	Operating
FP-AFP-ROA	Return on Assets	Capacity
FR-IS-FCC	Fixed charged cover	Capacity
FR-IS-IC	Interest cover	Capacity
FR-IS-ODC	Ordinary dividend cover	Capacity
FR-IS-PDC	Preference dividend cover	Capacity
FR-IS-SM	Safety margin ratio	Capacity
GI-GID	Growth in dividends	Capacity
GI-GIS	Growth in sales	Capacity
NF-Econ	Economical climate	Capacity
NF-Env	Environmental factors	Capacity
NF-Fis Pol	Fiscal policy	Capacity
NF-Leg	Legal factors	Capacity
NF-Pol	Political factors	Capacity

Table 5-7: Selective coding (continued)

Code	Element	Performance evaluation areas
NF-Soc	Sociological background	Capacity
NF-Tech Adv	Technological advancement	Capacity
FP-AFP-EPS	Earnings per Share	Financial
FP-AFP-P/E	Price earnings ratio	Financial
FP-AFP-ROE	Return on Equity	Financial
FP-VFP-CFROI	Cash flow return on investment	Financial
FP-VFP-CVAi	Cash value added	Financial
FP-VFP-EVA	Economic value added	Financial
FP-VFP-MVA	Market value added	Financial
GI-GIE	Growth in earnings	Financial
GI-GINAV	Growth in net asset value	Financial

Source: Own research

The selective coding from this point represents the fusion of the grounded theory method and multiple case study method. The conditions and differences encountered in the main categories are the motivation for building theory and generating research propositions. It was realised when testing the model, that the inclusion of the NF proved to be difficult to quantify the results, between the companies, as many studies agree. These results are subjective therefore stakeholders make use of the political, economic, social, technological, environmental and legal (PESTEL) analysis model to explain these indicators. It was therefore decided to exclude NF from the final integrated financial decision-making model using lean accounting principles (Section 6.4, page 144).

5.6 Quality and rigour of the qualitative research design

The following section identifies several methods that can be used to determine the validity. In order to ensure the trustworthiness and authenticity of qualitative research Knipper (2010:78) suggests the use of Lincoln and Guba's (1990) criteria of; resonance, rhetorical, empowerment and application. Knipper (2010:78-79) argues that resonance determines the degree of fit between the reported case studies and the overall

believability, while empowerment evokes the reader act upon suggested future research and applicability suggests that the reader will be able to apply to identify with the case study. Maxwell (1992:283-287) outlines the following types of validity; descriptive, interpretive, theoretical, generalisation and evaluative validity.

Descriptive validity of this study emanates from the examination of the accuracy of identified themes while the investigation of the phenomenon constitutes interpretive validity. Determining the relationship between the identified constructs of the conceptual model and similar studies theoretical validity are obtained. Knipper (2010:79) explains that the use of documents will enhance the theoretical validity. Generalisation validity is achieved during selective coding, while evaluative validity is established through the coding process, collection of data and the conclusions drawn in comparison to an alternative method. Knipper (2010:79) assesses that these five validity types are required at data collections as well as the coding stages; this will lend credibility to the model to assure it is theoretically in line with the empirical facts as proposed by Ryan *et al*. (2002:28). Mouton (2013:158) explains in order to confirm the success of the research an appraisal of the project needs to be undertaken. Babbie (2010:387) outlines this appraisal as the evaluation of some aspects of the research results as a whole. Grix (2010:166) regards this evaluation as the final stage of the study.

The study evaluated the integrated financial decision-making model using lean accounting principles on the impact on the financial decision-making. This is accomplished by combining the model with the motives and information requirements of different stakeholders within a multiple case study. The impact of the developed integrated financial decision-making model using lean accounting principles was measured by comparing the indicator values per company. The indicator values were calculated for the traditional financial decision-making models and the integrated financial decision-making model using lean accounting principles (Section 7.3, page 226). The usefulness of these indicator values was evaluated by using the contrariwise Mendelow matrix (Section 7.4, page 242). Using the Du Pont analysis (Section 7.6, page 255) the decision usefulness of the newly developed integrated financial decision-making model using lean accounting principles were endorsed.

The reliability of the case study analysis was achieved by having the results independently checked by an independent reviewer. The independent reviewer is a

management accountant and is well-versed in the profession having 30 years' experience. Using the theory building approach through a hybrid of grounded theory and case study the relationships and the distinct qualities of the constructs of lean accounting principles and their impact on financial decision-making was determined.

5.7 Summary

This chapter introduced the research methodology used to adress the problem statement (Section 1.2, page 5) and the research objectives (Section 1.4, page 6). A hybrid methodology was used based on grounded theory together with a multiple case study; the case study was performed by means of document analysis. The collection of the data and the analysis approach were explained. The next chapter discusses aspects that should be considered when an integrated decision-making model is being developed. Illustrating how the existing financial decision-making models should be changed, by incorporating the findings and conclusions made throughout Chapters 2 to 5 into the development of an integrated financial decision-making model using lean accounting principles.

CHAPTER 6

DEVELOPMENT OF AN INTEGRATED FINANCIAL DECISION-MAKING MODEL

"We cannot solve our problems with the same thinking we used when we created them."

- Albert Einstein

6.1 Introduction

Chapter 2 (page 16) to 4 (page 71) investigated all the variables of the decision-making environment that need to be considered when attempting to develop an integrated financial decision-making model. These variables are accounting standards, decision-usefulness objectives of accounting and lean accounting principles in general. This chapter discusses the development of an integrated financial decision-making model using lean accounting principles.

Chapters 2 and 3 clearly indicated that all the variables influence the stakeholders' ability. These findings seem to indicate in general that stakeholders are confronted with financial and non-financial aspects in their decision-making. It became clear that decision-making models need to become integrated if it is to be of value to stakeholders. Lean accounting principles suggest that value streams are an integrated part of value creation. In Chapter 2 (page 16) the following were indicated:

- The importance of the development of accounting standards that provide useful accounting information that is necessary for decision-making (Section 2.2, page 17).
- In a global business environment accounting standards should be reliable, of a high quality and consistent because it has economic and reporting consequences (Section 2.3, page 20).
- High quality accounting standards lead to peace of mind for stakeholders in their decision-making endeavours (Section 2.4, page 27).
- Cultural and value models influence the development of quality accounting standards (Section 2.5.1, page 33).
- Societies' cultural and value models influence political beliefs that will ultimately impact accounting standards (Section 2.5.2, page 37).

- The implementation of IAS are important for stakeholders that use accounting information for financial decision-making purposes as it ensures comparability, consistency and quality accounting information (Section 2.6, page39).

Chapter 3 (page 42) argues that stakeholders' financial decision-making principles and models while accentuating the following:

- Decision-making is not independent and is influenced by various factors and different stakeholders (Section 3.2, page 43).
- AISs must provide various stakeholders with information that meet decision-usefulness objectives (Section 3.3, page 50).
    - Financial ratio analysis is used to measure financial performance of the company by focusing on Traditional accounting-based financial performance measures (AFP) and VFP measures to assist with the stakeholders' decision-making (Section 3.4.2, page 52).
- Historical accounting information has little value for decision-making and therefore it is necessary to consider financial risk indicators such as (Section 3.4.3, page 61).
    - Sensitivity of capital
    - Sensitivity of income
- Using growth indicators influences financial decision-making by calculating trends (Section 3.4.4, page 64).
- Financial decision-making models can be improved by non-financial indicators and adopting a lean philosophy (Section 3.5, page 66).

Chapter 4 (page 71) discusses improving decision-making by implementing lean accounting principles and highlights the following:

- Implementing lean accounting principles has the potential to improve the decision usefulness and integrating reporting of accounting information for all stakeholders (Section 4.3, page 74).
- Lean accounting principles, practices and tools were introduced in Section 4.4 (page 77).
- The influence of lean accounting on decision-making was highlighted by value streams. Introducing the value streams focus on the evaluation of financial, capacity and operational areas as part of an integrated financial decision-making model that is useful for all stakeholders (Section 4.4, page 77).

Chapter 5 (page 96) discusses the philosophical paradigm and research methodology that relates to the study, explaining its appropriateness, discussing the population and sample. Furthermore, a detailed account was given on how the grounded theory and multiple case study were combined to develop an integrated financial decision-making model using lean accounting principles. The use of document analysis as part of the data collection process was also clarified.

This chapter explains how these findings were incorporated in the development of an integrated financial decision-making model using lean accounting principles. The explanation starts by giving a brief summary of some of the decision-making models found in the literature mentioning these models and results of these studies. This led to the motivation for developing a new integrated model. The design of an integrated financial decision-making model using lean accounting principles as a solution is discussed next.

The previous use of and the motivation for using integrated financial decision-making models by stakeholders in their decision-making efforts are discussed next.

6.2 Previous studies of integrated financial decision-making models

Chapter 1 (Section 1.1, page 1), reported that much research has been done on financial decision-making models. The purpose of this review is to provide an overview of what has been done in the past in order to identify limitations and areas for further research to be addressed in this study.

Wall and MacKenzie (2015:197-236) developed a model for solving decision making problems with multiple objectives, providing a practical quantitative investigation tool to determine which alternative is more effective that the other. The decision-making model integrates cost and effectiveness analysis to compare alternatives in order to evaluate which is the most cost-effective alternative. The Wall and Mackenzie (2015) study tested the integrated decision-making model to decide on the acquisition of an early warning radar system.

A fuzzy set theory was used by Karsak (2004:3959) to present a multiple objective decision-making (MODM) model, which includes both imprecise and subjective information inherent in the quality function deployment (QFD) planning process. Karsak (2004:3972) concluded that using fuzzy multiple objective programming approaches are

an alternative to the classical mathematical programming formulations to prioritise design requirements in the QFD planning process.

Karsak and Özogal (2009:660) investigated the use of an integrated decision-making model to select enterprise resource planning (ERP) software, based on QFD, fuzzy linear regression and zero-one goal programming. The integrated model considers company requirements and ERP systems characteristics by adopting QFD principles. The study provides an investment decision-making tool and its usefulness was illustrated by an application.

Karsak and Tolga (2001:49 & 61) constructed a fuzzy decision-making algorithm that helps to resolve the vagueness of advanced manufacturing systems (AMS) evaluation, by quantifying non-monetary impact. Karsak and Tolga (2001:61) found that using a comprehensive illustration, that fuzzy decision algorithm resolves the vagueness of the AMS evaluation process, by quantifying the non-monetary impact. This results in a less biased evaluation.

Rabelo, Eskandari, Shaalan and Helal (2007:546) demonstrate the significance of modelling service and manufacturing activities of the global supply chain of multi-national entities (MNEs) by integrating the analytical hierarchy process (AHP) technique, system dynamics (SD) and discrete evaluation simulation (DES). The model provided useful decision-making support to stakeholders that include both quantitative and qualitative results.

Sedevich Fonds (2012:338) uses integrated quality cost and accounting principles to develop a quality cost measurement model to create a comprehensive management control tool that verify achieved goals and proposed alternative courses of actions.

Yalcin *et al*. (2012:350-352) suggested a new financial performance evaluation model basis on AFP and VFP to rank companies within each sector of the Turkish manufacturing industry, making use of a fuzzy AHP to determine weighing criteria using financial and non-financial performance indicators.

Kee (2010:204) reported on how target costing add economic value to a company's decision-making by integrating the traditional target costing model with cost of capital. Integrating the traditional target costing model with cost of capital, Kee (2010:210) concludes that the traditional model overstates marginal cost of cash-related production

resources that lead to an acceptance of products that have a negative net present value, while rejecting the products with a positive net present value.

Barnabè (2011:464-467) developed a system dynamics-based balanced scorecard (BSC) combining the use a balanced scorecard approach, system dynamics principles and modelling techniques. This study found that the comprehensive management simulator is a strategic management tool, which includes both financial and non-financial information.

Baroma *et al*. (2013:239) proposed a new model to conduct the BSC by including lean philosophy into it and calling it the Lean-Balanced Scorecard. The findings of the study have led to a more innovative model that provides a more effective measurement tool in uncertain financial conditions.

From these previous studies on integrated decision-making models, it is evident that integrated models are more helpful to stakeholders to make better decisions. These previous studies have identified various gaps and ultimately all the researchers proposed the use of an integrated decision-making model that includes both financial and non-financial information. This commonality of including financial and non-financial indicators in integrated decision-making models posed a similar question; how to measure this non-financial information. The quantification of the non-financial indicators relied mostly on the inclusion of a fuzzy decision-making approach. The fuzzy decision-making approach uses a set of weights to determine the importance of each criterion. The Baroma *et al*. (2013) study highlights the introduction of lean principles in the BSC that has led to a more effective measurement tool.

These previous studies identified some gaps with decision-making models. It was suggested that in order to make decision-making models more effective, financial and non-financial information should be included. The Baroma *et al*. (2013) study suggested that the integration of lean to traditional models make these established models more efficient. Although all these studies have contributed to the body of knowledge on decision-making models, none include integration between lean accounting and financial decision-making models. This has led to the identified gap. The next section will explain the motivation to develop an integrated financial decision-making model using lean accounting principles.

6.3 Motivation of the development of integrated financial decision-making model using lean accounting

The above cited studies have developed significant financial decision-making models that are being widely used globally by stakeholders with relative good success. However, the limitations and areas for further research noted in these studies were assimilated into the development of a new integrated financial decision-making model using lean accounting principles.

As mentioned in this chapter (Section 6.2, page 136) and Chapter 1 (Section 1.2, page 5), previous studies, have mainly focused on elements of disclosure, integrated reporting and lean accounting that influence financial decision-making. Integrating these research elements have not received any attention from researchers and can be viewed as a shortcoming in the practical application of management accounting integration and research.

The literature study revealed no studies, local or international, which include the use of financial statements, integrated reports and lean accounting in financial decision-making models. These findings affirm and prominences the necessity for the development of an integrated financial decision-making model using lean accounting principles that will comply with all stakeholders' requirements.

An integrated financial decision-making model using lean accounting principles would make a momentous contribution to management accounting because it integrates financial statements, integrated reports and lean accounting in a financial decision-making model to be valuable for all stakeholders. This financial decision-making model should be implemented by shareholders, managers, employees, financiers, customers, government and the general public globally. The integrated financial decision-making model using lean accounting principles will facilitate all stakeholders to achieve their decision-making goals. The following sections provide the motivation for the use of financial decision-making models.

6.3.1 Motivation and criticism of lean accounting principles

Ample studies have been conducted on the use and implementation of lean accounting principles in companies (Dickson, Singh, Cheung, Wyatt & Nugent, 2008; Grove, Meredith, Macintyre, Angelis & Neailey, 2010(a); Nordin *et al*., 2010; Poksinska, 2010;

Satao, Thampi, Dalvi, Srinivas & Patil, 2012; Matt & Rauch, 2012; Enoch, 2013; Rahman *et al*., 2013; Ofileanu & Topor, 2014). Chapter 4 (Section 4.3, page 74) accentuates the advantages of employing lean accounting within a company. It was explained that lean accounting aid financial decision-making as it provides crucial operating and financial information (Section 4.3.2, page 76):

- Provide reports with relevance to the company's strategy providing financial and non-financial information.
- Reduces cost distortions created by traditional accounting methods.
- Increases the flexibility and timeliness of reports within the company.
- Encourages the use of value streams within the company.
- Improves value through eliminating wasteful activities (muda), inconsistency (mura) and strain on resources (muri) while embracing wealth creation within the company.

Lean accounting principles, however, have the following disadvantages:

- Insufficient knowledge of lean accounting principles within the company (Nordin *et al*., 2010:374; Bhasin, 2008:406)
- Lean implementation is expensive (Punnakitikashem, Buavaraporn & Chen, 2013:3)
- Success of lean depend on organisational culture (Fricke, 2010:29; Martinez-Jurada & Moyano-Fuentes, 2012:337; Sabry, 2014:96)
- Possible confusion to define waste (Polsinska, 2010:11; Grove, Meredith, Macintyre, Angelis & Neailey, 2010:213(b))
- Incompatibility with traditional management accounting systems (Ramasamy, 2005:22; De Arbulo-Lopez & Fortuny-Santos, 2010:582; Bahadir, 2011:8; Bhasin, 2011:408; Manjunath & Bargerstock; 2011:47; Ofileanu & Topor, 2014:345)

After careful consideration of the above-mentioned findings and regardless of the disadvantages narrated above, it can be argued that the use of lean accounting principles influence financial decision-making models for all stakeholders. The following section deliberates on how the integrated financial decision-making model using lean accounting principles will promote the decision-making goals of all stakeholders.

6.3.2 Specific motivation for the development of an integrated financial decision-making model using lean accounting

The development of an integrated financial decision-making model using lean accounting principles will support stakeholders by addressing the various factors that affect them, as indicated in Section 7.2.1, page 189, as it will:

- Ensure the development of reliable, quality and consistent accounting information that can be used to make financial decisions.
- Influence cultural and value models
- Provide useful financial ratios about financial performance, risk and growth indicators
- Contribute to the use of non-financial information in decision-making models
- Influence the financial decision-making ability of the general public

It is further the conviction of the author that the development of an integrated financial decision-making model using lean accounting principles will aid all stakeholders and will eliminate waste while creating value since it will:

- Support the shareholders (Section 6.3.2.1, page 141)
- Support the managers (Section 6.3.2.2, page 142)
- Support the employees (Section 6.3.2.3, page 142)
- Support the financiers (Section 6.3.2.4, page 142)
- Support the customers (Section6.3.2.5, page 143)
- Support the government (Section 6.3.2.6, page 143)
- Support the general public (Section 6.3.2.7, page 143)

The following sections discuss the way in which the integrated financial decision-making model using lean accounting principles provides support as mentioned above and how the requirements were embraced into the model design, in Section 6.4 (page 144).

6.3.2.1 Supporting the shareholders

The development of an integrated financial decision-making model using lean accounting principles will support shareholders by addressing the various factors that affect them, as indicated in (Section 7.2.1, page 189), as it could:

- Contribute to the increase in company value
- Ensure profit growth
- Influence the company's return on investment
- Aid in share price growth
- Resulting in the payment of higher dividends

6.3.2.2 Supporting the managers

The development of an integrated financial decision-making model using lean accounting principles will support managers by addressing the various factors that affect them, as indicated in (Section 7.2.1, page 189), as it will:

- Motivate management to develop realistic expectations in respect of salary increases, bonus pay-outs and promotion opportunities.
- Will aid to create a better working environment that is conducive to working conditions; atmosphere and motivation.
- Influence the profitability of the company's assets.

6.3.2.3 Supporting the employees

The development of an integrated financial decision-making model using lean accounting principles will support employees by addressing the various factors that affect them, as indicated in (Section 7.2.1, page 189), as it will:

- Motivate employees to become more than just employees but take responsibility for their actions and be stewards.
- Influence job security.
- Aid negotiations on targets, working conditions and remuneration.
- Support promotion opportunities.

6.3.2.4 Supporting the financiers

The development of an integrated financial decision-making model using lean accounting principles will support financiers by addressing the various factors that affect them, as indicated in (Section 7.2.1, page 189), as it will:

- Aid to determine whether the company qualify for debt.
- Calculate the average repayment period of different classes of debt financing.

- Contribute towards mitigating risk associated with repayments of liabilities by the company.
- Support the maintaining or even improvement of the company's credit rating.

6.3.2.5 Supporting the customers

The development of an integrated financial decision-making model using lean accounting principles will support customers by addressing the various factors that affect them, as indicated in (Section 7.2.1, page 189), as it will:

- Support the customers decision-making process by which consumers' needs are identified, information are collected, alternatives evaluated, and finally the purchase decision are made.
- Aid the determination of value and quality.
- Enhancing customer service.

6.3.2.6 Supporting the government

The development of an integrated financial decision-making model using lean accounting principles will support government by addressing the various factors that affect them, as indicated in (Section 7.2.1, page 189), as it will:

- Support the continual changes in legal and statutory requirement
- Contribute to monitoring best business practice

6.3.2.7 Supporting the general public

The development of an integrated financial decision-making model using lean accounting principles will support general public by addressing the various factors that affect them, as indicated in (Section 7.2.1, page 189), as it will:

- Contribute to determine the company's influence on the economy, environment and local community.
- Support environmental and social impact studies.

6.3.2.8 Summary of the motivation for the development of the new integrated financial decision-making model using lean accounting

It is apparent from Section 6.3.2.1 to 6.3.2.7 that the development of an integrated financial decision-making model using lean accounting principles will support all the

variables in the financial decision-making environment. The development of an integrated model needs to include the advantage and while mitigating the disadvantages of lean accounting principles (Section 6.3.1, page 139).

The rest of the chapter discusses how the integrated financial decision-making model using lean accounting principles was developed based on a framework for model design using a hybrid of grounded theory and multiple case studies as created by the author. In addition it further points out how the model was developed to encompass the general and specific motives for this study, as deduced in Section 6.3.2 (page 141).

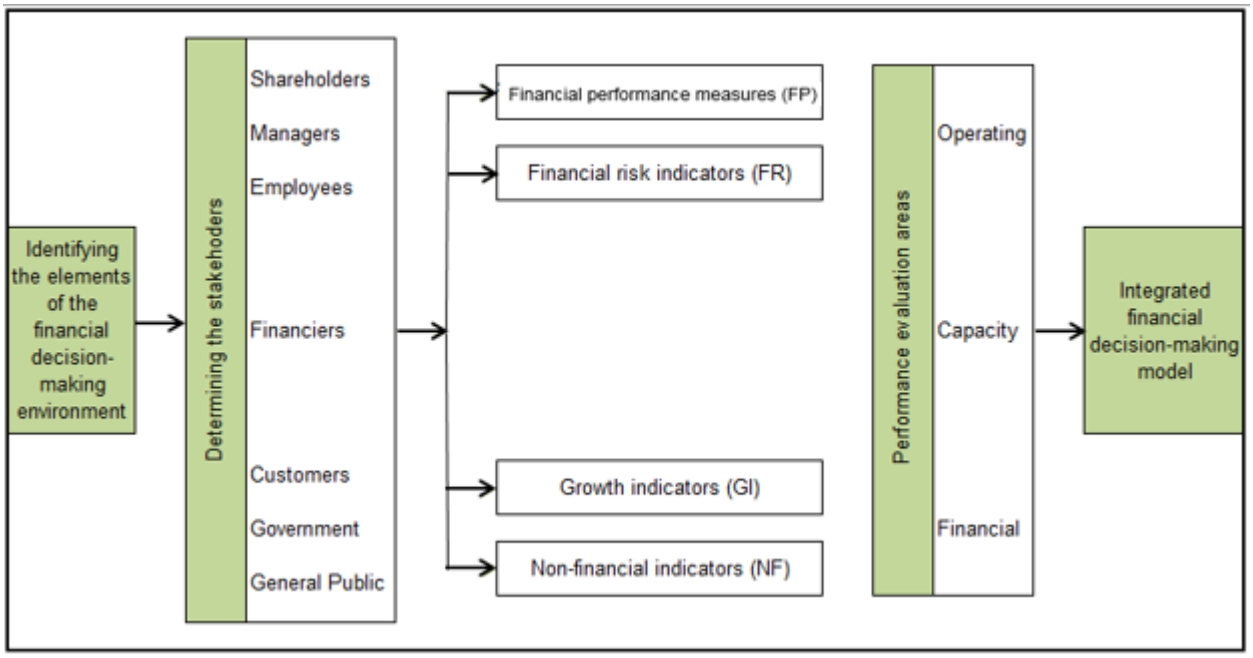
6.4 Design of an integrated financial decision-making model using lean accounting as a solution

The problem statement (Section 1.2, page 5) predicts that the development of an integrated financial decision-making model using lean accounting will influence the stakeholders' decision-making and will take accounting disclosure and usefulness to a higher level. The primary objective of this study is to develop an integrated decision-making model using lean accounting principles to influence the decision-making ability of all stakeholders irrespective of the accounting standard. This was achieved mainly by developing and integrated financial decision-making model, using a hybrid of grounded theory and multiple case studies.

An extensive literature review about elements that influence the financial decision-making landscape, determining the stakeholders' decision-making motives and their requirements, was conducted. Furthermore, it was deduced from the current literature what is deemed to be regarded as useful financial and non-financial analysis for the stakeholders. The study also considered lean accounting principles that were integrated to develop the model that addresses the identified gap in the literature (Section 1.1, page 1).

Figure 6-1 illustrates the framework of the integrated financial decision-making model using lean accounting principles. The integrated financial decision-making model delineated in the figure quantitatively to direct financial decisions and judgements about the extent, objectives and requirements of all stakeholders, was used. The model guides the stakeholder to obtain sufficient and appropriated financial and non-financial information about the company that will enable the stakeholder to make a satisfactory decision.

Figure 6-1: Framework for designing of an integrating financial decision-making model



Source: Own research

By explaining Figure 6-1 it is important to look at the four main focus points as the model's framework. The first focus point is identifying the elements that influence financial decision-making environment, which stems from Chapter 2. The identified elements include, the development of accounting standards, high quality-, consistent-, and reliable accounting information, the influence of culture and value systems along with political beliefs. The second focus point is the framework that suggests that it is imperative to determine the stakeholders who are involved as each of the stakeholders have different motives and information requirements (Section 7.2.1, page 189). By following an integrated approach, Sections 3.4 to 3.5 (page 52 to 66) identified the financial and non-financial indicators that formed the third focus point of the designed framework. Although NF wasincluded in the framework, it was not included in the final integrated model and did not form part of the financial decision-making model using lean accounting principles as was mentioned in Section 5.5.4.3 (page 129). Finally the model considers the lean accounting principles (Section 3.5.2, page 114) through the use of value streams making mention of operational, capacity and financial performance evaluation area.

By using grounded theory that was explained in Section 5.4.1 (page 105) and the model design framework the base model was developed. By developing the integrated financial decision-making model using lean accounting principles it is necessary to refer back to: 1] the main principles of a lean philosophy, (Table 4-1, page 73); and 2] principles, practices and tools (PPT) of lean accounting, (Table 4-3, page 79). Increasing the shareholders' value by reducing waste and increasing the cash flow by adding more value to customers are the ultimate drivers of lean accounting. This increase in value to stakeholders' approach and does not fit in with the traditional accounting approach. By understanding this value approach, Section 4.5 (page 83) considers the influence of a value stream within a company.

Value streams focus on financial and non-financial activities in order to create value and eliminate waste. By measuring companies' performance, lean advocates measuring value streams and not individual departments or processes. Using a value stream box report will enable the stakeholders to visualise the results and targets. The value stream box report will measure; financial, capacity and operational activities of a company. The purpose of the value stream box report is to measure, control and improve the value stream. The literature on lean accounting suggests as summarised in Section 4.5 (page 83) that these reports focus on the internal reporting of the company. This study adjusts the value stream box report to include traditional financial decision-making models that are known to be used by all stakeholders, to be included in the developed integrated decision-making model using lean accounting principles. Table 6-1 illustrates the integrated financial decision-making model using lean accounting principles. The model is arranged in performance evaluation areas, codes, elements and three financial periods namely previous, current and future. This provides a visual illustration to all stakeholders about the continuous performance of a company.

Table 6-1: Integrated financial decision-making model using lean accounting principles

Performance evaluation areas	Code	Element	Previous period	Current period	Future period
Operating	FR-CS-LQ-CPP	Creditors payment period			
	FR-CS-LQ-CR	Current ratio			
	FR-CS-LQ-DCP	Debtors collection period			
	FR-CS-LQ-IT	Inventory turnover			
	FR-CS-LQ-NIWC	Net investment in working capital			
	FR-CS-LQ-QR	Quick ratio			
	FR-CS-SO-D/E	Debt/Equity ratio			
	FR-CS-SO-ESTI	Equity to total shareholders' interest			
	FR-CS-SO-SHI	Shareholders' interest			
	FR-CS-SO-TATL	Total assets to total liabilities			
	FR-CS-SO-TSITA	Total shareholders ‘interest to total assets			
	GI-CGR	Critical growth rate			
	GI-FRTFG	Funds required to finance growth			

Table 6-1: Integrated financial decision-making model using lean accounting principles (continued)

Performance evaluation areas	Code	Element	Previous period	Current period	Future period
Capacity	FP-AFP-ROA	Return on assets			
	FR-IS-FCC	Fixed charged cover			
	FR-IS-IC	Interest cover			
	FR-IS-ODC	Ordinary dividend cover			
	FR-IS-PDC	Preference dividend cover			
	FR-IS-SM	Safety margin ratio			
	GI-GID	Growth in dividends			
	GI-GIS	Growth in sales			

Table 6-1: Integrated financial decision-making model using lean accounting principles (continued)

Performance evaluation areas	Code	Element	Previous period	Current period	Future period
Financial	FP-AFP-EPS	Earnings per share			
	FP-AFP-P/E	Price earnings ratio			
	FP-AFP-ROE	Return on equity			
	FP-VFP-CFROI	Cash flow return on investment			
	FP-VFP-CVAi	Cash value added			
	FP-VFP-EVA	Economic value added			
	FP-VFP-MVA	Market value added			
	GI-GIE	Growth in earnings			
	GI-GINAV	Growth in net asset value			

Source: Own research

The problem statement (Section 1.2, page 5) makes it clear that conciliation takes place between lean and financial accounting principles to influence the decision-making of all stakeholders. By applying the Straussian grounded theory, the key concepts where identified. The literature review (Chapter 2, 3 and 4) reports on the key concepts, while coding procedure (Section 5.5.4, page 118) provided the proposed integrated financial decision-making model using lean accounting principles. Table 6-1 is a combination of traditional tried and tested traditional financial decision-making models and lean accounting principles, which were identified in Table 4-1 (page 73). By utilising a value stream box report this integration of financial decision-making models and lean accounting were found to be the best practice. The value stream box report includes: the performance evaluation areas of operations, capacity and financial; elements of incorporating factors into the integrated model, as identified through the selective coding process (Section 5.5.4.3, page 129), and three financial periods (previous, current and future), through which continuous improvement can be measured.

Table 6-1 suggests that the integrated financial decision-making model using lean accounting principles are grouped in the following performance evaluation areas; operating-, capacity-, and financial areas. Each of these areas include some elements that measure financial performance-, risk-, growth- and non-financial indicators. Being true to lean principle P04 (Table 4-1, page 73) creating a culture of continues improvement, it consider previous, current and future periods. The box report provides the stakeholders with a visualisation of financial and non-financial information about historical, current and future performance evaluation areas.

The literature review highlighted traditional financial decision-making models that consider; traditional accounting-based -, modern value-based financial performance measures, financial risk-, and growth- and non-financial indicators. Each of these measures and indicators make use of an array of ratios. These ratios have been developed over a long time. Cassim (2014:17) reports that ratio analysis originated in the eighteenth century. Many studies also highlighted the importance of non-financial indicators, however, including non-financial indicators is not in the scope of this study.

Visualisation; value stream; box report, including financial as well as non-financial information; and continuous improvement are the main differences between traditional financial decision-making models and the developed integrated financial decision-

making model using lean accounting principles. The use of a value stream performance box report is suggested to highlight the indicators. The value stream performance box report has been explained in Section 4.5.3, page 88. An important principle in completion of the value stream performance box report is the adjustment of inventory that is only made after gross profit was calculated.

Table 6-1 included all the findings that are deemed to be necessary to be included in an integrated financial decision-making model using lean accounting principles. The Table consist of six columns namely: 1] performance evaluation area; 2] code; 3] element; 4] previous period; 5] current period; and 6] future period. The performance evaluation area, column 1; is divided into three distinct areas, which was developed during the axial coding process of this study that is explained in Section 5.5.4.2 (page 126). Column 2, represents the open coding process (Section 5.5.4.2, page 126) of the study where the emerging categories were grouped into subcategories. Element is the third column and it names what needs to be measured. Columns 4, 5, and 6 represent the financial period of the company and are reported as; previous period (historical); current period; and future period (budgeted/target). The differences between the traditional financial decision-making models and the developed integrated financial decision-making model using lean accounting principles are compared, analysed and discussed in detail in Chapter 7.

The principles of the model developed in this study were applied to a multiple case study, which incorporate the findings from the grounded theory methodology, on available financial information. The practical implementation of the newly developed integrated financial model has led to the achievement of another secondary objective of this study (Section 1.4.2, page 6); i.e. establishing the framework for developing an integrated financial decision-making model using lean accounting principles. This was done by combining the newly developed model that was possible through the use of a grounded theory methodology and then tested the model and applying it to information from multiple case studies. This independent test of the developed model by using multiple case studies demonstrated that the integrated financial decision-making model using lean accounting principles supports stakeholders' financial decision-making requirements.

In the remnant of this chapter attention is given on how the specific motivations with regard to aiding all stakeholders, waste elimination and value creation as discussed in

Section 6.3.2 (page 141) were integrated into the financial decision-making on which the model was based.

6.4.1 Supporting the shareholder

Section 6.3.2.1 (page 141) outlines the factors that need to be included in an integrated financial decision-making model using lean accounting principles to support the shareholders' financial decision-making ability. Table 6-2 illustrates how these factors were encompassing into the development of the integrated financial decision-making model using lean accounting principles. The performance evaluation area, as required by the lean accounting principle is recorded in the first column followed by the code. The elements of incorporated factors affecting shareholders decision-making requirements are indicated in the model are explained in the third column while the identified factors are listed in the last column. The contribution of each factor to influence the financial decision-making ability, as noted throughout Chapter 3 (page 42), is explained below the factors.

Table 6-2: Factors incorporated in the integrated financial decision-making model using lean accounting principles to support shareholders' financial decision-making

Performance evaluation area	Code	Elements of incorporating factors into the integrated model	Factors
Operating	FR-CS-SO-TSITA FR-CS-SO-ESTI FR-CS-SO-SHI	Total shareholders' interest to total assets Equity to total shareholders' interest Shareholders' interest	Contribute to the increase in company value. Ensure profit growth. Influence the company's return on investment. Aid in share price growth. Results in the payment of higher dividends.
Capacity	FP-AFP-ROA FR-IS-PDC FR-IS-ODC GI-GID	Return on assets Preference dividend cover Ordinary dividend cover Growth in dividends	Contribute to the increase in company value. Ensure profit growth. Influence the company's return on investment. Aid in share price growth. Resulting in the payment of higher dividends.

Table 6-2: Factors incorporated in the integrated financial decision-making model using lean accounting principles to support shareholders' financial decision-making (continued)

Performance evaluation area	Code	Elements of incorporating factors into the integrated model	Factors
Financial	FP-AFP-ROE	Return on equity	Contribute to the increase in company value. Ensure profit growth. Influence the company's return on investment. Aid in share price growth. Result in the payment of higher dividends.
	FP-AFP-EPS	Earnings per share	
	FP-AFP-P/E	Price earnings ratio	
	FP-VFP-EVA	Economic value added	
	FP-VFP-MVA	Market value added	
	FP-VFP-CFROI	Cash flow return on investment	

Table 6-2: Factors incorporated in the integrated financial decision-making model using lean accounting principles to support shareholders' financial decision-making (continued)

Contribution to achieve financial decision-making requirements by answering the following:
• What is the percentage of assets financed by shareholders' funds? • Determine the risk for potential investors, considering equity in the financing structure. • What is the relationship between external financing and shareholders' interest? • Calculate the extent to which preference and ordinary dividends are covered. • How is the sustainability being influenced by the company's growth? • Measuring profitability in terms of the effective use of assets. • Be able to determine the profitability on shareholders' investment. • Calculate the company's financial strength when determining the share price. • Answer how long it will take to recover the investment in the company. • Measure long-term profitability using economic profit and cost of capital. • Determine the increase in shareholders wealth. • Measure the CFROI. • Indicate the growth in earnings of interest to majority shareholders.

Source: Own research

Table 6-2 discussed the essential factors and how they were included in the integrated financial decision-making model using lean accounting principles to support the shareholders' financial decision-making ability. By adopting traditional ratios and applying it as part of an integrated financial decision-making model using lean accounting principles that includes; value creation and waste elimination through continuous improvement by making it visual to stakeholders using value stream performance box report words like ensure, aid and influence may be added as factors that will contribute to the financial decision-making ability.

In comparing the traditional financial decision-making models with the integrated financial decision-making model using lean accounting principles, shareholders' financial decision-making is now based on three performance evaluation areas. These three performance evaluation areas consider operating, capacity and financial elements, while traditional financial decision-making models focus on financial ratios that consider financial performance measures, risk indicators and growth indicators as was discussed in Section 3.4 (page 52). Shareholders' decision-making are being influenced by the integrated financial decision-making model using lean accounting principles in combining different combinations of financial ratios to determine the results of the performace evaluation ereas.

The shareholders want to measure performance; traditional financial decision-making models suggest calculating the return on assets (measuring the effective use of assets), return on equity (measuring the profitability of shareholders' investment), earnings per share (calculating the company's strength), and price earnings ratio (calculating how long it take to recover the investment). While the integrated financial decision-making model using lean accounting principles suggest measuring performance should be done by considering elements from each of the three performance evaluation areas. In total 13 elements are considered which are grouped into operating, capacity and financial evaluations. The In the next section, the focus shifts to the managers.

6.4.2 Supporting the managers

The developed integrated financial decision-making model using lean accounting principles will support the managers in their decision-making by addressing that factors that was refered to in Section 6.3.2.2 (page 142). Table 6-3 outlines how these factors

were considered into the developed model. The table is explained in the same fashion as Table 6-2 (page 153).

Table 6-3: Factors incorporated in the integrated financial decision-making model using lean accounting principles to support managers' financial decision-making

Performance evaluation area	Code	Elements of incorporating factors into the integrated model	Factors
Operating	FR-CS-LQ-CR	Current ratio	Motivate management to develop realistic expectations with regard to salary increases, bonus pay-outs and promotion opportunities. Will aid to create a better working environment that is conducive to working conditions; better atmosphere and motivation. Influence the profitability of the company's assets.
	FR-CS-LQ-QR	Quick ratio	
	FR-CS-LQ-NIWC	Net investment in working capital	
	FR-CS-LQ-DCP	Debtors collection period	
	FR-CS-LQ-CPP	Creditors payment period	
	FR-CS-LQ-IT	Inventory turnover	

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Table 6-3: Factors incorporated in the integrated financial decision-making model using lean accounting principles to support managers' financial decision-making (continued)

Performance evaluation area	Code	Elements of incorporating factors into the integrated model	Factors
Capacity	FP-AFP-ROA	Return on assets	Motivate management to develop realistic expectations with regard to salary increases, bonus pay-outs and promotion opportunities. Will aid in creating a better working environment that is conducive to working conditions; better atmosphere and motivation. Influence the profitability of the company's assets.
	FR-IS-SM	Safety margin ratio	
	GI-GIS	Growth in sales	
	GI-GID	Growth in dividends	

Table 6-3: Factors incorporated in the integrated financial decision-making model using lean accounting principles to support managers' financial decision-making (continued)

Performance evaluation area	Code	Elements of incorporating factors into the integrated model	Factors
Financial	FP-AFP-ROE	Return on equity	Motivate management to develop realistic expectations with regard to salary increases, bonus pay-outs and promotion opportunities. Will aid to create a better working environment that is conducive to working conditions; better atmosphere and motivation. Influence the profitability of the company's assets.
	FP-AFP-EPS	Earnings per share	
	FP-VFP-EVA	Economic value added	
	FP-VFP-MVA	Market value added	
	FP-VFP-CFROI	Cash flow return on investment	
	FP-VFP-CVAi	Cash value added	

Table 6-3: Factors incorporated in the integrated financial decision-making model using lean accounting principles to support managers' financial decision-making (continued)

Contribution to achieve financial decision-making requirements in answering the following:
• What is the percentage of assets financed by shareholders funds? • Calculate ability to pay short-term debt as and when become due. • Eliminates inventory to calculate the company's ability to pay short-term debt as and when become due. • Determine the working capital requirements to maintain current level of operations. • Measure the average repayment period of the debtors. • Calculate the average time it takes the company to repay creditors. • Determine how many times during the year the company will sell out all inventory. • Establish the growth rate to sustain the company. • Indicate the funds required ensuring sales growth will not be effected by cash shortages. • Measure profitability, considering the effective use of assets. • Determine the amount by which the sales can reduce before making losses. • Establish the growth in sales revenue over different financial years. • Measure the influence of dividend growth on the sustainability of company's growth.

Source: Own research

Table 6-3 indicated the factors that managers need to consider in their decision-making endeavour, and how it can be included in the developed integrated financial decision-making model using lean accounting principles. Management are concerned with sustainable short term performance, risk and growth as their remuneration depend on how well the company is performing. Section 3.4 (page 52) discuss the measurements used by traditional financial decision-making models. Table 6-3 apply the lean accounting principles to an integrated financial decision-making model and the difference is clear as management now consider the three performance evaluation areas suggested by Section 4.5.2 (page 86). The integrated financial decision-making model suggests management consider 16 elements that could influence the operating, capacity and financial performance of the company.

It is suggested in Table 6-3 that if management consider the capacity performance evaluation area, return on assets, safety margin ratio growth in sales and growth in dividends need to be measured. The traditional financial decision-making models do not consider capacity as a performance evaluation area, and would merely report on financial performance measures, risk- and growth indicators separately. In doing this return on assets would be reported as part of the financial performance measures, safety margin will be reported as a financial risk indicator, while growth in sales and growth in dividends will be reported separately as growth indicators. The integration of these financial ratios provides a more holistic view of the company's financial results and would support management's financial decision-making.The next section illustrates how employees are incorporated into the integrated model.

6.4.3 Supporting the employees

Employees also have their own decision-making motives and requirements, Table 6-4 illustrates how these motives and requirements were incorporated into the integrated financial decision-making model. By explaining Table 6-4 it is necessary to refer back to the factors in Section 6.3.2.3 (page 142) that need to be considered in order to support employees' decision-making.

Table 6-4: Factors incorporated in the integrated financial decision-making model using lean accounting principles to support employees' financial decision-making

Performance evaluation area	Code	Elements of incorporating factors into the integrated model	Factors
Operating	FR-CS-SO-TATL FR-CS-LQ-CR FR-CS-LQ-QR	Total assets to total liabilities Current ratio Quick ratio	Establish a stewardship culture among employees. Influence job security. Aid in the calculations in respect of; targets, working conditions and remuneration. Establish tangible guidelines for employee promotion opportunities.

Table 6-4: Factors incorporated in the integrated financial decision-making model using lean accounting principles to support employees' financial decision-making (continued)

Performance evaluation area	Code	Elements of incorporating factors into the integrated model	Factors
Capacity	FR-IS-SM	Safety margin ratio	Establish a stewardship culture among employees. Influence job security. Aid in the calculations in respect of; targets, working conditions and remuneration. Establish tangible guidelines for employee promotion opportunities.
	FR-IS-IC	Interest cover	
	FR-IS-PDC	Preference dividend cover	
	FR-IS-ODC	Ordinary dividend cover	
	GI-GIS	Growth in sales	
	GI-GID	Growth in dividends	

Table 6-4: Factors incorporated in the integrated financial decision-making model using lean accounting principles to support employees' financial decision-making (continued)

Performance evaluation area	Code	Elements of incorporating factors into the integrated model	Factors
Financial	FP-AFP-ROE	Return on equity	Establish a stewardship culture among employees. Influence job security. Aid in the calculations in respect of; targets, working conditions and remuneration. Establish tangible guidelines for employee promotion opportunities.
	FP-AFP-EPS	Earnings per share	
	FP-VFP-EVA	Economic value added	
	FP-VFP-MVA	Market value added	

Table 6-4: Factors incorporated in the integrated financial decision-making model using lean accounting principles to support employees' financial decision-making (continued)

Contribution to achieve financial decision-making requirements in answering the following:
• Indicate the company's ability meet to long-term commitments. • Calculate ability to pay short-term debt as and when become due. • Eliminates inventory to calculate ability to pay short-term debt as and when become due. • Determine the amount by which the sales can reduce before making losses. • Measure the extent by which the company's earnings can decrease before interest payments cannot be met. • Calculate the extent to which preference dividends and ordinary dividends are covered. • Measure the growth in sales revenue over financial years. • Determine the influence of dividend pay-out on the sustainability of company's growth. • Measure profitability on shareholders' investment. • Establish the importance of the company's strength, by determining share price. • Calculate the long-term profitability using economic profit and cost of capital. • Measure the increase in shareholders' wealth.

Source: Own research

Table 6-4 discussed the essential factors and how they were included in the integrated financial decision-making model using lean accounting principles by supporting financial decision-making efforts of employees. Employees are mainly concerned about job security and equitable remuneration (Section 6.3.2.3, page 142) and will use traditional financial decision-making models to focus on financial performance, sustainability and growth as was summarised In Section 3.4 (page 52). Table 6-4 however indicate that the integrated financial decision-making model using lean accounting principles, affords employees the opportunity to make financial decision using elements that impact the operating, capacity and financial performance evaluation areas of the company.

In working towards the lean principle (P05) as identified in Table 4-1(page 73), using an integrated financial decision-making model as suggested by Table 6-4 pave the way for involving and engaging all employees. Using Table 6-4 to in answering concerns about job security, employees can determine if the concern is an operating, capacity or financial problem or a combination. The three performance evaluation areas assess financial performance, risk and growth ratios as suggested by the traditional financial decision-making models in Section 3.4 (page 52) are combined in Table 6-4. Employees' financial decisions can now be taken based in a combination of financial ratios which are integrated and consider 12 elements. The support that the integrated model gives to financiers is discussed next.

6.4.4 Supporting the financiers

Financing a company is one of the three reasons for financial management decision (Section 7.2.1, page 189). Section 6.3.2.4 (page 142) outlines the factors that need to be included in an integrated financial decision-making model using lean accounting principles to support the requirements of the financiers. Table 6-5 emphasised how these factors were included in the developed model using lean accounting principles.

Table 6-5: Factors incorporated in the integrated financial decision-making model using lean accounting principles to support financiers' financial decision-making

Performance evaluation area	Code	Elements of incorporating factors into the integrated model	Factors
Operating	FR-CS-SO-TSITA	Total shareholders' interest to total assets	Aid to determine whether the company qualify for debt. Calculate the average repayment period of different classes of debt financing. Contribute towards measuring risk associated with repayments of liabilities by the company. Help to establish, maintain or improve the company's credit rating.
	FR-CS-SO-TATL	Total assets to total liabilities	
	FR-CS-SO-ESTI	Equity to total shareholders' interest	
	FR-CS-SO-D/E	Debt/equity ratio	
	FR-CS-SO-SHI	Shareholders' interest	
	FR-CS-LQ-CR	Current ratio	
	FR-CS-LQ-QR	Quick ratio	
	FR-CS-LQ-DCP	Debtors collection period	
	FR-CS-LQ-CPP	Creditors payment period	
	GI-FRTFG	Funds required to finance growth	

Table 6-5: Factors incorporated in the integrated financial decision-making model using lean accounting principles to support financiers' financial decision-making (continued)

Performance evaluation area	Code	Elements of incorporating factors into the integrated model	Factors
Capacity	FR-IS-IC FR-IS-FCC	Interest cover Fixed charged cover	Aid to determine whether the company qualify for debt. Calculate the average repayment period of different classes of debt financing. Contribute towards measuring risk associated with repayments of liabilities by the company. Help to establish, maintain or improve the company's credit rating.

Table 6-5: Factors incorporated in the integrated financial decision-making model using lean accounting principles to support financiers' financial decision-making (continued)

Performance evaluation area	Code	Elements of incorporating factors into the integrated model	Factors
Financial	FP-AFP-ROE	Return on equity	Aid to determine whether the company qualify for debt. Calculate the average repayment period of different classes of debt financing Contribute towards measuring risk associated with repayments of liabilities by the company. Help to establish, maintain or improve the company's credit rating.
	FP-VFP-CVAi	Cash value added	

Table 6-5: Factors incorporated in the integrated financial decision-making model using lean accounting principles to support financiers' financial decision-making (continued)

Contribution to achieve financial decision-making requirements in answering the following:
• Indicate the company's ability to meet long-term commitments. • Determine the percentage of assets financed by shareholders' funds. • Calculates the company's ability to meet long-term commitments. • Estimates the risk for potential investors, considering own capital in financing structure. • Measure the extent of how much external financing is used. • Determine the relationship between external financing and shareholders' interest. • Calculate ability to pay short-term debt as and when it becomes due. • Eliminates inventory by calculating ability to pay short-term debt as and when it became due. • The average time the debtors take to repay accounts. • Determine the average time it takes for the company to repay creditors. • Estimate the funds required to ensure sales growth will not be affected by cash shortages. • Calculates the extent by which earnings can decrease before interest payments cannot be met. • Determine the ability of the company to cover the financing and other fixed charges commitments. • Measure profitability on shareholders' investment. • Calculate the long-term profitability using real economic profit and cost of capital.

Source: Own research

Table 6-5 illustrated how the essential factors that influence financiers' decision-making were included in the integrated financial decision-making model using lean accounting principles to support short-, medium- and long-term financiers. Financiers play an important role in any company, and must be provided with financial information that will answer the questions in Section 6.3.2.4 (page 142). Using traditional financial decision-making models (Section 3.4, page 52) financiers will typically look at financial performance measures, to determine affordability, and determine risk, through the sensitivity of capital and income. The integrated financial model as suggested in Table 6-5, make use of a combination of 14 elements that measure the company's performance in three performance evaluation areas namely; operating, capacity and financial.

Financiers can by looking at the capacity performance evaluation area immediately see the interest cover and fixed charged cover of the company. This will allow the financier to determine risk profile of the company and its sensitivity of profits to external factors (Table 3-4, page 63). This is however not seen in isolation as the operating and financial performance evaluation areas are also simultaneously highlighted. The next section focusses on customers.

6.4.5 Supporting the customers

Section 4.2 (page 72) proposes that creating value for customers is a stanchion of lean accounting. Therefore it was a prerequisite for the development of an integrated financial decision-making model using lean accounting principles that such a model supports customers by addressing the various factors that affect them, as indicated in Section 6.3.2.5, page 143. Table 6-6 illustrates how these factors were encompassed into the development of the integrated financial decision-making model using lean accounting principles. Firstly, by identifying the lean accounting performance evaluation area, then the coding, before incorporating the elements that can be used in customers decision-making and secondly the factors that will affect customers' decision-making.

Table 6-6: Factors incorporated in the integrated financial decision-making model using lean accounting principles to support customers' financial decision-making

Performance evaluation area	Code	Elements of incorporating factors into the integrated model	Factors
Operating	FR-CS-SO-D/E	Debt/Equity ratio	Support the customers decision-making process by which consumers' needs are identified, information are collected, alternatives evaluated, and finally the purchase decision are being made. Aid the determination of value and quality. Enhancing customer service through implementation of customer satisfaction measures.
	FR-CS-LQ-DCP	Debtors collection period	
	FR-CS-LQ-CPP	Creditors payment period	
	FR-CS-LQ-IT	Inventory turnover	

Table 6-6: Factors incorporated in the integrated financial decision-making model using lean accounting principles to support customers' financial decision-making (continued)

Performance evaluation area	Code	Elements of incorporating factors into the integrated model	Factors
Capacity	FR-IS-SM FR-IS-ODC	Safety margin ratio Ordinary dividend cover	Support the customers' decision-making process by which consumers' needs are identified, information are collected, alternatives evaluated, and finally the purchase decision are being made. Aid the determination of value and quality. Influence customer service through implementation of customer satisfaction measures.

Table 6-6: Factors incorporated in the integrated financial decision-making model using lean accounting principles to support customers' financial decision-making (continued)

Performance evaluation area	Code	Elements of incorporating factors into the integrated model	Factors
Financial	FP-AFP-ROE	Return on equity	Support the customers' decision-making process by which consumers' needs are identified, information are collected, alternatives evaluated, and finally the purchase decision are being made. Aid the determination of value and quality. Influence customer service through implementation of customer satisfaction measures.
	FP-AFP-EPS	Earnings per share	
	FP-VFP-CFROI	Cash flow return on investment	

Table 6-6: Factors incorporated in the integrated financial decision-making model using lean accounting principles to support customers' financial decision-making (continued)

Contribution to achieve financial decision-making requirements in answering the following:
• Measure the extent of how much external financing is used. • Calculate the average time the debtors take to repay accounts. • Determine the average time it takes for the company to repay creditors. • Calculate the number of times the company will sell out all inventories. • Estimate the amount by which the sales can reduce before making losses. • Determine the extent to which ordinary dividends are covered. • Measure profitability on shareholders' investment. • Calculate company's strength, important by determining share price. • Measure real cash return on capital invested.

Source: Own research

Table 6-6 illustrated and indicated the factors that customers' need to consider in their decision-making quest, and how it can be included in the developed integrated financial decision-making model using lean accounting principles. The information requirements of customers were indicated in Table 3-1 (page 49) with the empirical findings summarised in Table 7-1 (page 191). In considering these findings if a customer need to determine whether the company are able to supply in their demand, the traditional financial decision-making models focus on financial performance, sustainability and growth (Section 3.4, page 52). Therefore typical financial ratios that will be calculated and used in financial decision-making are liquidity, using the current and quick ratios, as well as establishing if the company's creditor's repayment period will not influence supply. Table 6-6 indicate that customers are able to determine the company's performance on using the three evaluation areas of operating, capacity and financial.

Each of these performance evaluation areas consider different financial ratios to explain the performance, the combination is totally different from what is suggested by traditional financial decision-making models. In determining whether the company will be able to supply in their demand Table 6-6, suggest the customers take financial decisions on debt to equity ratio, debtors collection period, creditors payment period, and inventory turnover as operating performance evaluations. The use of the safety margin ratio indicates the capacity of the company to absorb external factors, while financial performance evaluations will highlight the company profitability. The integrated financial decision-making model using lean accounting principles, give the customers a fresh perspective to make financial decisions. The next section focusses on government as a stakeholder of the company.

6.4.6 Supporting the government

In a highly volatile environment with continual transformation being the order of the day the development of an integrated financial decision-making model using lean accounting principles has to consider the factors that was highlightened in Section 6.3.2.6 (page 143). Table 6-7 illustrates how these burning issues where incorporated into the integrated financial decision-making model.

Table 6-7: Factors incorporated in the integrated financial decision-making model using lean accounting principles to support government's financial decision-making

Performance evaluation area	Code	Elements of incorporating factors into the integrated model	Factors
Operating	FR-CS-SO-TATL	Total assets to total liabilities	Aid the continuous changes with regard to legal and statutory requirements.
	FR-CS-SO-ESTI	Equity to total shareholders' interest	Monitor proposed best business practice.
	FR-CS-LQ-NIWC	Net investment in working capital	Establish means for efficient tax collection.

Table 6-7: Factors incorporated in the integrated financial decision-making model using lean accounting principles to support government's financial decision-making (continued)

Performance evaluation area	Code	Elements of incorporating factors into the integrated model	Factors
Capacity	FR-CS-LQ-NIWC	Net investment in working capital	Aid the continuous changes with regard to legal and statutory requirements.
	FR-IS-PDC	Preference dividend cover	Monitor proposed best business practice.
	FR-IS-ODC	Ordinary dividend cover	Establish means for efficient tax collection.
	GI-GIS	Growth in sales	

Table 6-7: Factors incorporated in the integrated financial decision-making model using lean accounting principles to support government's financial decision-making (continued)

Performance evaluation area	Code	Elements of incorporating factors into the integrated model	Factors
Financial	FP-AFP-ROE FP-AFP-EPS GI-GIE	Return on equity Earnings per share Growth in earnings	Aid the continuous changes with regard to legal and statutory requirements. Monitor proposed best business practice. Establish means for efficient tax collection.

Table 6-7: Factors incorporated in the integrated financial decision-making model using lean accounting principles to support government's financial decision-making (continued)

Contribution to achieve financial decision-making requirements in answering the following:
• Measure the company's ability to meet to long-term commitments. • Determine the risk for potential investors, considering own capital in financing structure. • Calculate the working capital requirements to maintain current level of operations. • Measure the extent to which preference dividends are covered. • Determine the extent to which ordinary dividends are covered. • Calculate the growth of sales revenue over financial years. • Measure profitability on shareholders' investment. • Calculate company's strength, important by determining share price. • Determine the growth in earnings to majority shareholders.

Source: Own research

Table 6-7 depicted the factors that government needs to consider in their decision-making strategy, and how the integrated financial decision-making model using lean accounting principles can embrace it. Table 3-1 (page 49) identifies information requirements of government for making decisions to maximise tax collection and to determine the impact on the environment. Traditional financial decision-making models (Section 3.4, page 52) deduce that financial performance measure indicate the company's profitability. Using the integrated financial decision-making model using lean accounting principles as suggested in Table 6-7 indicate operating, capacity and financial performance evaluation areas, calculating nine elements. The integrated model indicate in the operating performance evaluation area elements of total assets to total liabilities, equity to total shareholders' interest and the net investment in working capital. Using this information and comparing different companies, a monitoring tool can be developed to establish best business practise as well as a tool to measure the influence of changes to legal and statutory requirements. In the final section of this section the general public will come under the magnifying glass.

6.4.7 Supporting the general public

Section 3.2 (page 43) suggested that the general public is influential on the decision-making environment of a company. For this reason the author has also included the factors indicated in Section 6.3.2.7 (page 143) in the integrated financial decision-making model using lean accounting principles. These factors include determining the company's sway and impact on the economy, environment and local community that are tubulised in Table 6-8.

Table 6-8: Factors incorporated in the integrated financial decision-making model using lean accounting principles support general public's financial decision-making

Performance evaluation area	Code	Elements of incorporating factors into the integrated model	Factors
Operating	Mainly non-financial factors	Industry trends Labour relations	Measure the company's influence on the economy, environment and local community. Determine environmental and social impact studies.
Capacity	Mainly non-financial factors	Sociological background Technological advancement Environmental factors	Measure the company's influence on the economy, environment and local community. Determine environmental and social impact studies.
Financial	FP-AFP-EPS FP-AFP-P/E	Earnings per Share Price earnings ratio	Measure the company's influence on the economy, environment and local community. Determine environmental and social impact studies.

Table 6-8: Factors incorporated in the integrated financial decision-making model using lean accounting principles support general public's financial decision-making (continued)

Contribution to achieve financial decision-making requirements in answering the following:
• Measure the company's ability to meet long-term commitments. • Determine the risk for potential investors, considering own capital in financing structure. • Calculate the working capital requirements to maintain current level of operations. • Measure the extent to which preference dividends are covered. • Determine the extent to which ordinary dividends are covered. • Calculate the growth of sales revenue over financial years. • Measure profitability on shareholders' investment. • Calculate company's strength, important by determining share price. • Determine the growth in earnings to majority shareholders.

Source: Own research

Table 6-8 illustrated how the essential factors that influence the general public's decision-making were included in the integrated financial decision-making model using lean accounting principles, however, only the financial performance area will be measured. Traditional financial decision-making models focus on financial ratios that consider financial performance measures, risk indicators and growth indicators as was discussed in Section 3.4 (page 52). Section 4.3.2 (page 76) highlight the short comings of traditional accounting, and suggest implementing lean accounting principles in order to overcome these short comings. Table 6-7 suggest the general public need to consider financial and non-financial indicators. The importance of non-financial indicators was discussed in Section 3.5.1 (page 67). Non-financial indicators include five elements of which two are classified in the operating performance evaluation area and three in the capacity performance evaluation area.

The elements included in the operating performance evaluation area are; industry trends and labour relations, while sociological background, technological advancement and environmental factors form the elements that will measure the capacity performance evaluation area. None of these elements are being considered by the traditional financial decision-making models. Table 6-7 suggest that the financial performance evaluation area report the earnings per share and the price earnings ratio are useful in making financial decision about the company. The final section put this chapter in perspective by summarising the highlights of the chapter.

6.4.8 Summary on the design of the newly developed integrated financial decision-making model using lean accounting principles

The previous sections (Section 6.4.1, page 152 to Section 6.4.7, page 182) discussed how the newly developed integrated financial decision-making model using lean accounting principles, support the different stakeholders in their decision-making ability. During the study the researcher made use of coding to establish the themes, patterns and categories that ultimately formed the integrated financial decision-making. Section 6.3.2 (page 141) discusses the motivations of all the stakeholders that influence financial decision-making models, as it were identified throughout Chapter 2 (page 16) to Chapter 4 (page 71).

These findings were incorporated into the newly developed integrated financial decision-making model using lean accounting principles. Traditional financial decision-making models focus on financial ratios that consider financial performance measures, risk indicators and growth indicators while the integrated financial decision-making model using lean accounting principles, consider three performance evaluation areas, namely; operating, capacity and financial. The unorthodox combination and use of established financial ratios in order to evaluate the company's performance in three distinct evaluation areas, also allow for a more holistic approach the financial decision-making by the different stakeholders. This integration would lead to more conservative results that will influence the decision-making of all stakeholders. This influence will become evident from the results that are discussed in Section 7.3 (page 226).

6.5 Summary

The chapter started off by introducing integrated decision-making models that were found in the literature review. An interesting commonality with the reported decision-making models is the use of quantitative and qualitative data in order to influence the decision-making model. The rest of the chapter, deliberates on the combination of the motivation and design of the integrated financial decision-making model using lean accounting principles. The developed integrated financial decision-making model using lean accounting principles assistance towards stakeholders in their decision-making was also pinpointed. The integration of financial decision-making models and lean accounting principles found its motivation from Albert Einstein's remark that "*We cannot solve our problems with the same thinking we used when we created them*". The analysis and findings of this study are presented in the next chapter.

CHAPTER 7

DATA ANALYSIS AND RESULTS

"The world as we have created it is a process of our thinking. It cannot be changed without changing our thinking." - Albert Einstein

7.1 Introduction

This chapter critically reviews the data analysis and research results, describing and explaining the development of the integrated financial decision-making model, discussion methods and sampling methods. Reference is also made to findings in Chapter 2 to 6 and furthermore discusses feedback and interpretation obtained from case study research.

A conclusion is then drawn as to whether the newly developed decision-making model did indeed influence the decision-making ability of stakeholders (Section 7.3, page 226). An evaluation of the newly developed integrated financial decision-making model was done by means of the results obtained. This is discussed with reference to the data obtained (Section 7.5, page 243). Finally a comparison of the Du Pont analysis was done to determine if the newly developed integrated financial decision-making model influence the return on assets (ROE).

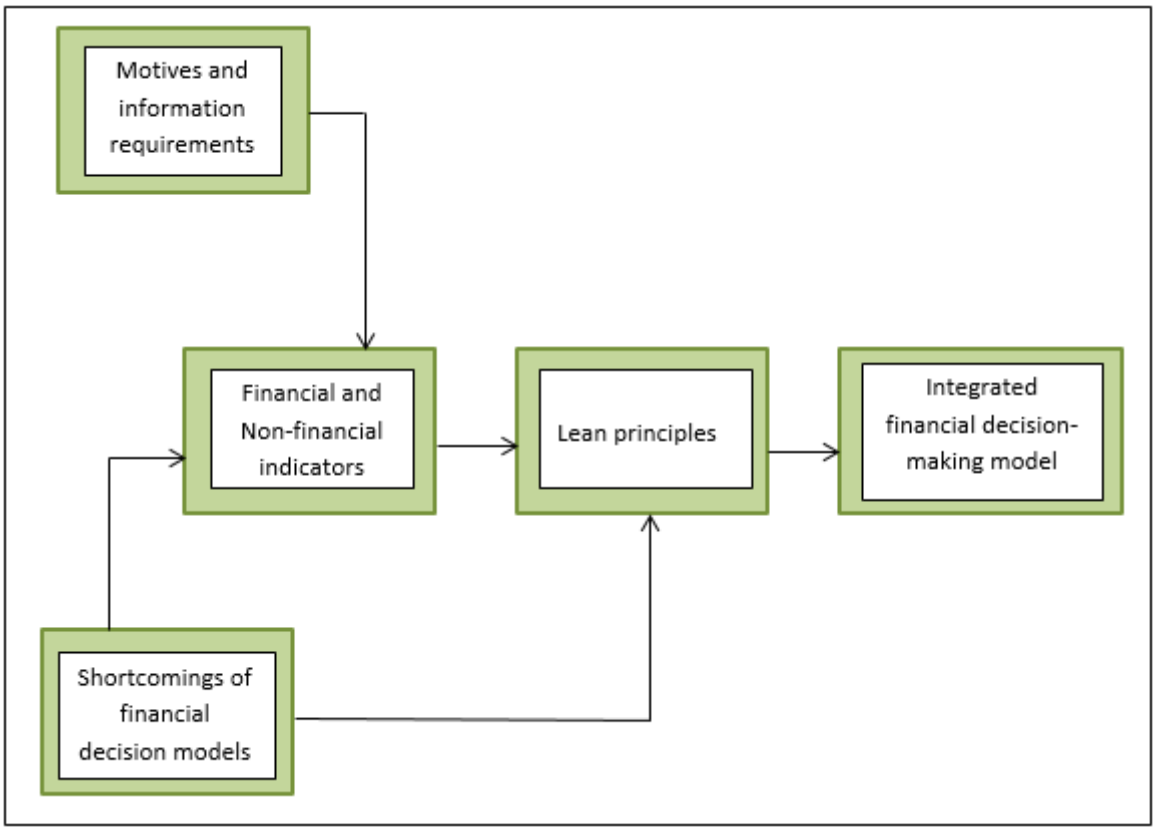
The conceptual model features the core categories of financial decision-making modelling, financial performance, financial risk-, non-financial indicators and lean accounting principles. The model is the outcome of selective coding established after comparing and contrasting the unique conditions and differences within and across the companies that are discussed in the findings that helped to formulate the research objectives.

The 2014, 2015 and 2016 Annual Reports of BP, Chevron and Sasol (BP, 2014; Chevron, 2014; Sasol, 2014; BP, 2015; Chevron, 2015; Sasol, 2015; BP, 2016; Chevron, 2016; Sasol, 2016) were content-analysed using both financial and non-financial data as part of the analytical investigation. The conceptual model will ideally be the framework for future financial decision-making research utilising lean accounting principles.

7.2 An integrated financial decision-making model using lean accounting principles

The conceptual model features the core categories identified during the axial coding phase. The model is the result of selective coding after comparing and constructing the original conditions and differences within and across the companies and accounting reporting standards that are discussed in the findings, which helped to establish and formulate the research objectives. Figure 7-1 indicates the theoretical financial decision-making model using lean accounting principles.

Figure 7-1: Theoretical model using lean-accounting principles



Source: Own research

Figure 7-1 indicates the elements of the theoretical model that was used in the multiple case study. This section presents the multiple case studies of the requirements of stakeholders, shortcomings of traditional and value added decision-making models, financial and non-financial indicators, lean accounting principles and the impact of an integrated financial decision-making model using lean accounting principles. Furthermore, this section reveals the emerging propositions and a

discussion of the relationship of how the core categories react to one another. Ideally the conceptual model would form the framework for future research.

7.2.1 Financial decision-making motives and information requirements

The literature review in Chapter 3 indicated a prevailing dependence on the information requirements of the various stakeholders. Furthermore, stakeholders have an interest (Donaldson & Preston, 1995:67; Harrison & Wicks, 2013:103; Correia *et al*., 2015:1-44) and the ability to influence (Freeman, 2010:46; Correia *et al*., 2015:1-44) the company. Bartlett, Beech, de Hart, de Lange, Erasmus, Hefer, Madiba, Middelberg, Plant, Streng, Thayser and van Rooyen (2014:676) argue that this interest is not limited to the financial performance and financial position but more importantly the future sustainability of the company. Usadolo and Caldwell (2016) assess that not all stakeholders have achieved an equal competitive participation in decision-making and implementation in the company. Harrison and Wicks (2013:1) argue that active stakeholders are reported to have a positive influence on the value and performance of the company while Bartlette, *et al*. (2014:276) explain that stakeholder involvement determines the outcome of business decisions and predicts that each stakeholder makes decisions based on the analysis of the financial and non-financial information provided in a company's annual report, and which are being influenced by stakeholders' needs and expectations of the company (Wu & Wokutch 2015:1). Skae, Vigario, Benade, Combrink, de Graaf, Esterhuyse, Jonker, Klopper, Ndlovu, Nobyati, Plant, Steyn, and Steyn (2014:6) identifiy the following stakeholders namely: Investors (shareholders and owners); Financiers (debenture holders, banker and creditors); Managers (branch manager, department manager, board of directors, CEO, supervisors, foremen); Employees (people working for the company that are not managers); Suppliers (lease holders, logistics, service providers, goods providers, supply chain, venue providers); Customers (people who buy and make use of the company's goods or services); Government (legal, regulators, tax authorities, local authority); General public (environmental groups, local people, non-human, pressure groups, social groups, trade unions).

Once the stakeholders were identified more attention was devoted to determine what motivates financial decisions and what information is required by them. Through the gathered information the emerging categories were identified. The emerging

categories indicate the following; main interests, influence, decision-making purposes, information requirements, financial or non-financial, where the information can be found and what are the performance measures. Table 7-1 summarises these findings in relationship to various stakeholders. Table 7-1 was compiled after an extensive literature study was done, whereby the financial decision-making motives and information requirements of stakeholders were explored. From the literature study the following themes were identified; main interest, influence, decision-making purpose, information requirements, financial or non-financial information, where the information can be found, and what the performance measures are that were used.

Table 7-1: Financial decision-making motives and information requirements

Shareholders	
Main Interest	Increasing company value, return on investment, profit growth, share price growth, dividends.
Influence	Voting rights, impact on approach towards other stakeholders, profit objectives, annual accounts, short-term orientation, and value of company rising.
Decision-making purposes	Business owners constantly face decisions about business finances. Start-ups, decisions about how to fund the business and the most appropriate source of funding are important. For businesses that are already in existence, decisions about how to manage cash flow and acquire assets are equally important. So vital are decisions on financials that many business owners rely on professionals such as accountants for expert insight.
Information requirements	Shareholders require accounting information to analyse the viability and profitability of their investment and to determine any future course of action. Investors require accounting information to analyse the feasibility of investing in the company. Investors want to make sure they can earn a reasonable return on their investment.
Financial or non-financial	Shareholders of corporations need financial information to help them make decisions on what to do with their investments (shares), i.e. hold, sell, or buy more. Prospective investors need information to assess the company's potential for success and profitability. In the same way, small business owners need financial information to determine if the business is profitable and whether to continue, improve or exit it.
Information to be found	Investors and potential investors are interested in their potential profits and the security of their investment. Future profits may be estimated from the target company's past performance as shown in the income statement. The security of their investment will be revealed by the financial strength and solvency of the company as shown in the statement of financial position.
Performance measure	Business owners need financial information from their operations to determine whether the business is profitable. It helps to make decisions such as to continue operating the business, whether to improve business strategies or whether to give up on the business altogether.

Table 7-1: Financial decision-making motives and information requirements (continued)

Financiers	
Main Interest	Capital and interest being repaid, maintain credit rating.
Influence	Effects of financing, types of financing, distribution of financing, considerations in financing, concerns in financing.
Decision-making purposes	Creditors are interested in knowing if a company will be able to honour its payments as they become due.
Information requirements	Creditors require accounting information to determine the credit worthiness of the organisation. Terms of credit are set by creditors according to the assessment of their customers' financial health.
Financial or non-financial	Lenders, trade creditors or suppliers are interested in the company's ability to pay obligations when they become due, upon maturity (solvency) and especially the company's ability to pay short-term obligations (liquidity).
Information to be found	Lenders need to know if they will be repaid. This will depend on the solvency of the company, which should be revealed by the statement of financial position. Long-term loans may also be backed by "security" given by the business over specific assets. The value of these assets will be indicated in the statement of financial position.
Performance measure	Creditors are interested in knowing if a company will be able to honour its payments as they become due. They use cash flow analysis of the company's accounting records to measure the company's liquidity, or its ability to make short-term payments.

Table 7-1: Financial decision-making motives and information requirements (continued)

Managers	
Main Interest	Business performance, salary, bonuses, targets, level of status, working conditions and atmosphere, job satisfaction, promotions.
Influence	Ethics, communication, employee input, goals, morale, planning, company structure, implementing.
Decision-making purposes	Managers whether owners or hired, regularly face economic decisions on how much supplies will we purchase? Do we have enough cash? How much did we make last year? Did we meet our targets? All those, and many other questions and business decisions, require analysis of accounting information.
Information requirements	Managers require accounting information to analyse the organisation's performance and position and take appropriate measures to improve the company results.
Financial or non-financial	Managers who use accounting information to make decisions related to the company's operations.
Information to be found	Managers would predominantly use monthly management accounts as their main source of financial information.
Performance measure	The managers of the company use their financial statement analysis to make intelligent decisions about their performance. For instance, they may gauge cost per distribution channel, or how much cash they have left, from their accounting reports and make decisions from these analysis results.

Table 7-1: Financial decision-making motives and information requirements (continued)

Employees	
Main Interest	Salary, wages, bonuses, overtime, targets, working conditions and atmosphere, job security, job satisfaction, promotions.
Influence	Productivity, customer relations, performance, value of company, customer satisfaction, manager output, strikes.
Decision-making purposes	Employees are involved in decisions that directly affect how their work is done. In order to effectively participate in group decisions, employees must have the necessary skills and experience. Without relevant knowledge, participants in group decision-making may not grasp the issues, know how to analyse alternatives, or be able to determine which option to choose.
Information requirements	Employees require accounting information to assess the company's profitability and its consequence on their future remuneration and job security.
Financial or non-financial	Employees are interested in the company's profitability and stability. They are after the ability of the company to pay salaries and provide employee benefits. They may also be interested in its financial position and performance to assess company expansion possibilities and career development opportunities.
Information to be found	Managers will mostly be able to supply the required information of the organisation to the employees. Due to the public availability of information of the investigated companies, the employee will also get information on the electronic and printed media.
Performance measure	Employees need to know if their employment is secure and if there is a possibility of a pay raise. They want to be abreast of their company's profitability and stability. Employees may also be interested in knowing the company's financial position to see whether there may be plans for expansion and therefore, career prospects for them.

Table 7-1: Financial decision-making motives and information requirements (continued)

Customers	
Main Interest	Value for money, availability of product, quality of product, customer service, and the company's ability fulfil the customers' demands.
Influence	Quality of products and services, price base, manner of conducting business, profit growth, business continuity, change in preferences.
Decision-making purposes	Customer decision-making is a process by which consumers identify their needs, collect information, evaluate alternatives, and make the purchase decision. These actions are determined by psychological and economic factors and are influenced by environmental factors such as cultural, group, and social values.
Information requirements	Customers require accounting information about the company whether the company can provide fast and easy services and provides excellent customer self-services.
Financial or non-financial	When there is a long-term involvement or contract between the company and its customers, the customers become interested in the company's ability to continue its existence and maintain stability of operations. This need is also heightened in cases where the customers depend upon the entity.
Information to be found	Customers need to know that a company can continue to supply them into the future. This is especially true if the customer is dependent on a company for specialised supplies.
Performance measure	Customers need to know about the ability of the company to service its clients into the future. The need to know about the company's stability of operations is heightened if the customer (i.e. a distributor or procurer of specialised products) is dependent wholly on the company for its supplies.

Table 7-1: Financial decision-making motives and information requirements (continued)

Government	
Main Interest	Manner of operating, tax, job creation, success, responsibility.
Influence	Policies, regulations, taxation, subsidies, support, laws, spending, interest rates, economy spending.
Decision-making purposes	The government regularly changes laws in line with its political policies. As a result businesses continually have to respond to changes in the legal framework. Examples of legal changes include: the creation of a National Minimum Wage and proclamation of the National Credit Act, providing increasingly tighter protection for consumers to protect them against unscrupulous business practice.
Information requirements	Government require accounting information to determine the credibility of the tax returns filed on behalf of the company.
Financial or non-financial	Governing bodies of the state, especially the tax authorities, are interested in an entity's financial information for taxation and regulatory purposes. Taxes are computed based on the results of operations and other tax bases. In general, the state would like to know how much the taxpayer earn to determine the tax due thereon.
Information to be found	Government agencies need to know how the economy is performing in order to plan financial and industrial policies. The tax authorities also use financial statements as a basis to assess the amount of tax payable by a business.
Performance measure	Governing and regulating bodies of the state look at financial statement analysis to determine how the economy is performing in general so they can plan their financial and industrial policies. Tax authorities also analyse a company’s statements to calculate the tax that the company has to pay.

Table 7-1: Financial decision-making motives and information requirements (continued)

General public	
Main Interest	Environmental and social impact.
Influence	Steer manner in which business operations are conducted, triple bottom line, consumer attitude, green management practices.
Decision-making purposes	The general public is interested in the effects the company would have on the economy, environmental and local community.
Information requirements	Regulatory Authorities require accounting information to ensure that the company's disclosure of accounting information is in accordance with the rules and regulations set in order to protect the interests of the stakeholders who rely on such information to form their decisions.
Financial or non-financial	General Public may be interested in the effects of a company on the economy, environment and the local community.
Information to be found	The public may wish to assess the effect of the company on the economy, local environment and local community.
Performance measure	Anyone in the general public, like students, analysts and researchers, may be interested in using a company’s financial statement analysis. They may wish to evaluate the effects that the company may have on the environment, or the economy or even the local community. For instance, if the company is running corporate social responsibility programmes to improve the community, the public may want to be aware of the future operations of the company.

Source: Own research

Table 7-1, indicated seven stakeholders that will make financial decisions. The stakeholders have been summarised in stakeholder groups. The stakeholder group represent the general generic term. This means that shareholders will include current shareholders as well as potential shareholders and financiers. These include; bankers, debenture holders, and even creditors.

In summary, the reliance of stakeholders on financial information in financial decision-making is influenced by the annual financial statements, the accounting reporting standards that were used and the decision motives. By integrating financial decision-making models with lean accounting principles more conservative results would be obtained, this could potentially influence the decision-making of the various stakeholders.

The stakeholders of the three companies are diverse yet similar, although the accounting reporting standards are different. The stakeholders will ultimately be able to obtain the required information from the annual financial statements and integrated reports help them in their decision-making process.

As mentioned in Section 5.5.1 (page 112) the study made use of document analysis, that is a well establish method of data collection that give the data authenticity and credibility as it makes use of official documents that was compiled by persons that is well-versed in the discipline (Creswell, 2014:241). The study is based on the annual financial statements of; BP p.l.c., Chevron Corporation and Sasol Limited, which were prepared by professional accountants using relevant accounting standards and that were audited by registered auditors. A motivation for the selected companies was provided in Chapter 5. Table 7-2 provides a summary of what the document analysis reveals.

Table 7-2: Results of document analysis:

		Sasol - C1						Chevron - C2						BP p.l.c - C3					
Coding	**Description**	**2014**	***Pg.***	**2015**	***Pg.***	**2016**	***Pg.***	**2014**	***Pg.***	**2015**	***Pg.***	**2016**	***Pg.***	**2014**	***Pg.***	**2015**	***Pg.***	**2016**	***Pg.***
		US$ m		**US$ m**		**US$ m**		**US$ m**		**US$ m**		**US$ m**		**US$ m**		**US$ m**		**US$ m**	
Information from the statement of financial performance																			
TO_1	Turnover – current	$19 508	*109*	$16 181	*97*	$11 911	*56*	$200 494	*31*	$129 925	*31*	$110 215	*33*	$353 568	*103*	$222 894	*103*	$183 008	*122*
TO_0	Turnover – prior	$19 197	*109*	$19 508	*97*	$16 181	*56*	$220 156	*31*	$200 494	*31*	$129 925	*33*	$379 136	*103*	$353 568	*103*	$222 894	*122*
COS	Cost of Sales	$8 587	*109*	$7 002	*97*	$4 912	*56*	$119 671	*31*	$69 751	*31*	$59 321	*33*	$281 907	*103*	$164 790	*103*	$132 219	*122*
GP	Gross profit	$10 921	*109*	$9 179	*97*	$6 999	*56*	$80 823		$60 174		$50 894	*33*	$71 661	*103*	$58 104	*103*	$50 789	*122*
EMP	Employee related expenditure	$2 750	*109*	$1 930	*97*	$1 647	*56*	$10 973	*31*	$12 214	*31*	$10 687	*33*	$13 936	*159*	$12 928	*161*	$11 233	*179*
PROD	Production cost (Material & conversion costs excluding labour)	$8 587	*109*	$7 002	*97*	$4 912	*56*	$119 671		$69 751		$59 321		$281 907		$164 790		$132 219	
OPS	Operating expenses	$3 761	*109*	$3 184	*97*	$3 683	*56*	$38 290		$42 623		$37 294		$51 313		$53 094		$39 986	
Dep	Depreciation	$1 301	*109*	$1 185	*97*	$1 127	*56*	$16 793	*31*	$21 037	*31*	$19 547	*33*	$15 163	*103*	$15 219	*103*	$14 505	*122*
EBITA	Earnings before interest, taxation & amortisation	$4 410	*109*	$4 065	*97*	$1 669	*56*	$31 560	*31,68*	$5 337	*31,68*	$2 913	*33,71*	$6 412	*103*	-$7 918	*103*	-$430	*122*
FIC	Finance charges	$68	*109*	$83	*97*	$36	*56*	$358	*68*	$495	*68*	$753	*71*	$1 462	*103*	$1 653	*128*	$1 865	*122*
TI	Total interest expenses	$185	*109*	$195	*97*	$161	*56*	$358	*68*	$495	*68*	$753	*71*	$1 025	*128*	$1 065	*103*	$1 221	*145*
Tax	Taxation	$1 414	*109*	$1 260	*97*	$598	*56*	$11 892	*31*	$132	*31*	$1 729	*33*	$947	*103*	-$3 171	*103*	-$2 467	*122*
NPAT	Net Profit after tax	$2 928	*109*	$2 722	*97*	$1 035	*56*	$19 310	*31*	$4 710	*31*	-$431	*33*	$4 003	*103*	-$6 400	*103*	$172	*122*
NOPAT	Net operating profit after tax	$2 928	*109*	$2 722	*97*	$1 035	*56*	$19 310	*31*	$4 710	*31*	-$431	*33*	$4 003	*103*	-$6 400	*103*	$172	*122*
$EATS_1$	Earnings Attributable to shareholders – current year	$2 928	*109*	$2 722	*97*	$1 035	*56*	$19 310	*31*	$4 710	*31*	-$431	*33*	$4 003	*103*	-$6 400	*103*	$172	*122*
$EATS_0$	Earnings Attributable to shareholders – prior year	$3 063	*109*	$2 928	*97*	$2 722	*56*	$21 597	*31*	$19 310	*31*	$4 710	*33*	$23 758	*103*	$4 003	*103*	-$6 400	*122*
PD_1	Preference Dividends – current	$68		$82	*138*	$68		$0	*31*	$0	*31*	$0	*33*	$2	*131*	$2	*131*	$1	*148*
PD_0	Preference Dividends – prior	$71		$68	*138*	$82		$0	*31*	$0	*31*	$0	*33*	$2	*131*	$2	*131*	$2	*148*
$EATOSH_1$	Earnings Attributable to ordinary shareholders – current year	$2 860	*109*	$2 640	*97*	$2 648	*56*	$19 310	*31*	$4 710	*31*	-$431	*33*	$4 003	*103*	-$6 402	*103*	$172	*122*
$EATOSH_0$	Earnings Attributable to ordinary shareholders – prior year	$3 063	*109*	$2 860	*97*	$2 640	*56*	$21 597	*31*	$19 130	*31*	$4 710	*33*	$23 758	*103*	$4 003	*103*	-$6 402	*122*
OD_1	Ordinary Dividends – current year	$1 109		$965	*198*	$798		$7 992	*35*	$7 992	*35*	$8 032	*37*	$5 850	*131*	$6 659	*131*	$4 611	*148*
OD_0	Ordinary Dividends – prior year	$926.01		$1 109	*198*	$965		$7 928	*35*	$7 928	*35*	$7 992	*35*	$5 441	*131*	$5 850	*131*	$6 659	*148*
RI	Retained Income for the current year	$1 567	*109*	$1 393	*97*	$1 152		$11 310		-$3 409		-$8 532		-$1 849		-$13 061		-$4 440	

Table 7-2: Results of document analysis: (continued)

		Sasol – C1						Chevron – C2						BP p.l.c - C3					
Coding	**Description**	**2014**	***Pg.***	**2015**	***Pg.***	**2016**	***Pg.***	**2014**	***Pg.***	**2015**	***Pg.***	**2016**	***Pg.***	**2014**	***Pg.***	**2015**	***Pg.***	**2016**	***Pg.***
		US$ m		**US$ m**		**US$ m**		**US$ m**		**US$ m**		**US$ m**		**US$ m**		**US$ m**		**US$ m**	
Information from the statement of financial position																			
TA_1	Total Assets – current year	$26 341	*108*	$26 590	*96*	$26 561	*57*	$266 026	*33*	$266 103	*33*	$260 078	*35*	$284 305	*105*	$261 832	*105*	$263 316	*124*
TA_0	Total Assets – prior year	$24 914	*108*	$26 341	*96*	$26 590	*57*	$253 753	*33*	$266 026	*33*	$266 103	*35*	$305 690	*98*	$248 305	*105*	$261 832	*124*
NCA	Non-current assets	$17 190	*108*	$17 824	*96*	$19 210	*57*	$223 794	*33*	$230 756	*33*	$230 459	*35*	$197 043	*105*	$191 230	*105*	$195 503	*124*
PPE	Property, plant & equipment	$10 475	*108*	$11 160	*96*	$10 541	*57*	$183 173	*33*	$188 396	*33*	$182 186	*35*	$130 692	*105*	$129 758	*105*	$129 757	*124*
A_{DEP}	Depreciating asset	$10 475	*108*	$11 160	*96*	$10 541	*57*	$183 173	*33*	$188 396	*33*	$182 186	*35*	$130 692	*105*	$129 758	*133*	$129 757	*124*
OA	Other assets	$6 715	*108*	$6 664	*96*	$8 669	*57*	$40 621		$42 360		$48 273		$66 351		$62 050		$65 746	
CA_1	Current assets – current year	$9 151	*108*	$8 766	*96*	$7 351	*57*	$42 232	*33*	$35 347	*33*	$29 619	*35*	$87 262	*105*	$70 024	*105*	$67 813	*124*
CA_0	Current assets prior year	$8 709	*108*	$9 151	*96*	$8 766	*57*	$50 250	*33*	$42 232	*33*	$35 347	*35*	$96 840	*105*	$87 262	*105*	$70 024	*124*
I_{CLOSE}	Closing inventory	$2 515	*108*	$1 902	*96*	$1 618	*57*	$6 505	*33*	$6 334	*33*	$5 419	*35*	$18 373	*105*	$14 142	*105*	$17 655	*124*
I_{BEGIN}	Opening inventory	$2 289	*108*	$2 515	*96*	$1 902	*57*	$6 380	*35*	$6 505	*33*	$6 334	*35*	$29 231	*105*	$18 373	*105*	$14 142	*124*
AR_1	Accounts receivable – current year	$2 803	*108*	$2 335	*96*	$1 933	*57*	$16 736	*33*	$12 860	*33*	$14 092	*35*	$31 038	*105*	$22 323	*105*	$20 675	*124*
AR_0	Accounts receivable – prior year	$2 850	*108*	$2 803	*96*	$2 335	*57*	$21 622	*35*	$16 736	*33*	$12 860	*35*	$39 831	*105*	$31 038	*105*	$22 333	*124*
TE	Total equity	$16 425	*108*	$16 145	*96*	$14 440	*57*	$156 191	*33*	$153 886	*33*	$146 722	*35*	$112 642	*105*	$98 387	*105*	$96 843	*124*
OSE	Ordinary Shareholders Equity	$17 709		$15 744	*98*	$13 026		$1 832	*35*	$1 832	*33*	$1 832	*35*	$5 002	*155*	$5 028	*155*	$5 263	*172*
PSE	Preference Shareholders Equity	$1 120		$995	*138*	$823		$0	*35*	$0	*33*	$0	*35*	$21	*155*	$21	*155*	$21	*172*
OSC	Ordinary share capital	$2 701		$2 402	*98*	$1 987		$16 041	*35*	$16 330	*35*	$16 595	*35*	$43 902	*157*	$43 902	*157*	$46 122	*174*
SP	Share premium	$0		$0		$0		$16 041	*33*	$16 330	*33*	$16 595	*35*	$10 260	*156*	$10 234	*156*	$12 219	*174*
TSC	Total share capital	$2 822		$2 509	*98*	$2 076		-$183 155		-$179 746		-$171 214		-$87 562		-$76 340		-$70 375	
Res	Reserves	$0		$0		$0		$0		$0		$0		$28 619	*156*	$28 619	*156*	$28 619	*174*
RI_1	Retained Income at the end of the current year	$14 887		$13 236	*98*	$10 950		$184 987	*33*	$181 578	*33*	$173 046	*35*	$92 564	*157*	$81 368	*157*	$75 638	*175*
RI_0	Retained Income at the end of the prior year	$13 320		$11 843	*98*	$9 798		$173 677	*35*	$184 987	*33*	$181 578	*35*	$103 787	*157*	$92 564	*157*	$81 368	*175*
TSI	Total shareholders' interest	$16 425		$16 145	*98*	$14 440	*57*	$156 191	*33*	$153 886		$146 722	*35*	$112 642		$98 387		$96 843	
TL	Total Liabilities	$9 916		$10 445	*98*	$12 121	*57*	$109 835	*33*	$112 217		$113 356	*35*	$171 663	*105*	$163 445	*105*	$166 473	*124*
NCL_1	Non-Current Liabilities – current year	$6 251	*108*	$7 048	*96*	$9 293	*57*	$77 909	*33*	$85 753	*33*	$81 571	*35*	$108 048	*105*	$108 721	*105*	$108 119	*124*
NCL_0	Non-Current Liabilities – prior year	$5 899	*108*	$6 251	*96*	$7 048	*57*	$70 308	*35*	$77 909	*33*	$85 753	*35*	$102 471	*105*	$108 048	*105*	$108 721	*124*

Table 7-2: Results of document analysis: (continued)

		Sasol - C1						Chevron - C2						BP p.l.c - C3					
Coding	**Description**	**2014**	***Pg.***	**2015**	***Pg.***	**2016**	***Pg.***	**2014**	***Pg.***	**2015**	***Pg.***	**2016**	***Pg.***	**2014**	***Pg.***	**2015**	***Pg.***	**2016**	***Pg.***
		US$ m		**US$ m**		**US$ m**		**US$ m**		**US$ m**		**US$ m**		**US$ m**		**US$ m**		**US$ m**	
Information from the statement of financial position – Continue																			
LD	Long-term loan	$2 201	*96*	$3 227	*96*	$5 303	*57*	$23 960	*33*	$33 584	*33,57*	$35 193	*35*	$53 338	*146*	$52 582	*146*	$58 820	*163*
SD	Short-term loan	$248	*96*	$274	*96*	$136	*57*	$3 790	*33*	$4 928	*33*	$10 840	*35*	$487	*146*	$956	*146*	$1 006	*163*
D_{Tax}	Deferred tax	$1 715	*96*	$1 854	*96*	$1 611	*57*	$21 920	*33*	$20 689	*33*	$17 516	*35*	$13 893	*105*	$9 599	*105*	$7 238	*124*
LTL	Long-term liabilities	$4 508	*96*	$5 159	*96*	$7 489	*57*	$77 909	*33*	$85 753	*33*	$81 571	*35*	$94 155	*105*	$99 122	*105*	$100 881	*124*
STL	Short-term liabilities	$929	*96*	$843	*96*	$494	*57*	$12 926	*33*	$12 948	*33*	$17 799	*35*	$42 129	*105*	$21 695	*105*	$18 773	*124*
IBD	Interest bearing debt	$2 449		$3 501		$5 439		$27 750		$38 512		$46 033		$53 825		$53 538		$59 826	
CL_1	Current liabilities current year	$3 665	*96*	$3 397	*96*	$2 828	*57*	$31 926	*33*	$26 464	*33*	$31 785	*35*	$63 615	*105*	$54 724	*105*	$58 354	*124*
CL_0	Current liabilities – prior year	$3 540	*108*	$3 665	*96*	$3 397	*57*	$33 018	*33*	$31 926	*33*	$26 464	*35*	$72 812	*98*	$63 615	*105*	$54 724	*124*
AP_1	Accounts payable –current year	$2 597	*96*	$2 454	*96*	$2 265	*57*	$19 000	*33*	$13 516	*33*	$13 986	*35*	$40 118	*105*	$31 949	*105*	$37 915	*124*
AP_0	Accounts payable - prior year	$2 597	*108*	$2 597	*96*	$2 454	*57*	$22 815	*35*	$13 516	*33*	$13 516	*35*	$47 159	*98*	$40 118	*105*	$31 949	*124*
TD	Total debt	$2 449	*96*	$3 501	*96*	$5 439	*57*	$27 750	*33*	$38 512	*33*	$46 033	*35*	$53 825	*105*	$53 538	*105*	$59 826	*124*
NAV_1	Net asset value – current year	$16 425	*96*	$16 145	*96*	$14 440	*57*	$156 191	*33*	$153 886	*33*	$146 722	*35*	$112 642	*105*	$98 387	*105*	$96 843	*124*
NAV_0	Net asset value – prior year	$15 475	*96*	$16 425	*96*	$16 145	*57*	$150 427	*33*	$156 191	*33*	$153 886	*35*	$130 407	*105*	$76 642	*105*	$98 387	*124*
NWC_1	Net working capital – current year	$5 486	*96*	$5 369	*96*	$4 523	*57*	$10 306	*33*	$8 883	*33*	-$2 166	*35*	$23 647	*105*	$15 300	*105*	$9 459	*124*
NWC_0	Net working capital – prior year	$5 169	*96*	$5 486	*96*	$5 369	*57*	$17 232	*33*	$10 306	*33*	$8 883	*35*	$24 028	*105*	$23 647	*105*	$15 300	*124*

Table 7-2: Results of document analysis: (continued)

		Sasol - C1						Chevron - C2						BP p.l.c - C3					
Coding	**Description**	**2014**	***Pg.***	**2015**	***Pg.***	**2016**	***Pg.***	**2014**	***Pg.***	**2015**	***Pg.***	**2016**	***Pg.***	**2014**	***Pg.***	**2015**	***Pg.***	**2016**	***Pg.***
		US$ m		**US$ m**		**US$ m**		**US$ m**		**US$ m**		**US$ m**		**US$ m**		**US$ m**		**US$ m**	
Other Information																			
QOS_{Issued}	No of ordinary shares Issued	678 935 812	*178*	679 480 362	*178*	679 775 162	*88*	2 442 676 580		2 442 676 580	*33*	2 442 676 580	*35*	20 005 961	*155*	20 108 771 000	*155*	21 049 696	*172*
MPS	Market price per share	$58.44	**1*	$36.98	**1*	$27.00	**1*	$112.18	**2*	$89.96	**2*	$117.70	**2*	$38.12	**3*	$31.26	**3*	$37.38	**3*
TMV	Total market value (Market capitalisation)	$37 230.47		$21 623.58		$12 914.93		$246 269.46		$181 231.19		$241 470.03		-$53 062.37		$575 062.18		-$59 039.16	
TCI	Total capital invested	$20 090		$19 542		$17 268		$188 117		$180 350		$178 507		$176 257		$153 111		$155 197	
CI	Capital Invested	$20 090		$19 542		$17 268		$188 117		$180 350		$178 507		$176 257		$153 111		$155 197	
CC	Capital charge	$3 184		$3 526		$3 574		$19 317		$20 965		$21 631		$15 555		$14 046		$16 837	
WACC	Weighted average cost of capital	13.41%	**4*	14.61%	**4*	14.71%	**4*	7.82%	**5*	8.30%	**5*	8.79%	**5*	6.37%	**6*	6.11%	**6*	7.47%	**6*
ED	Economic depreciation (Assume asset life of 3 years)	$1 216		$1 392		$1 322		$13 204		$14 339		$14 607		$7 795		$7 444		$8 969	
OGCF	Operating gross cash flows	$5 884		$7 128		$5 727		$60 715		$38 265		$17 961		$46 803		$20 920		$11 618	
SCF	Sustainable cash flows	$4 668		$5 736		$4 405		$47 511		$23 926		$3 354		$39 008		$13 476		$2 649	
CRCF	Current rand gross cash investment	$30 526		$30 774		$29 957		$259 539		$253 949		$238 365		$292 789		$261 913		$258 270	
CROGI	Cash return on gross cash investment	0.21		0.29		0.29		0.26		0.21		0.09		0.25		0.15		0.08	
BEP	Break-even point	$11 752		$9 161		$9 132		$123 093		$119 470		$105 537		$329 145		$259 610		$191 278	
EPS_{Basic}	Earnings per share – Basic	$4.67	*97*	$4.25	*97*	$1.49	*56*	$10.21	*33*	$2.46	*33*	-$0.27	*33*	$1.23	*148*	$2.12	*148*	$0.04	*148*
$EPS_{Diluted}$	Earnings per share – Diluted	$4.65	*97*	$4.25	*97*	$1.49	*56*	$10.14	*33*	$2.95	*33*	-$0.27	*33*	$1.23	*148*	$2.12	*148*	$0.04	*148*
AVE_{201x}	201x - Conversion rate @ AVE R$	R 10.39	*97*	R 11.45	*97*	R 14.52	*56*												
YE_{201x}	201x - Conversion rate @ YE R$	R 10.82	*96,99*	R 12.17	*96,99*	R 14.71	*57*												

Source(s): BP, 2014; Chevron, 2014; Sasol, 2014; BP, 2015; Chevron, 2015; Sasol, 2015; BP, 2016; Chevron, 2016; Sasol, 2016

The following subsection discusses the limitations of current financial decision-making models.

7.2.2 Deficiencies of current financial decision-making models

Financial decision-making models rely on financial statements; these financial statements depend on accounting information. Fouché and Barnard (2013:674), Skae *et al*. (2014:315), and Correia *et al*. (2015:5-11) agree that accounting information have inherent limitations. These authors all support the following limitations:

- Inflation – the financial statements reports the historic cost basis and does not reflect the reduction in the purchase power. All the authors conclude that this may lead to an incorrect or distorted financial decision, particularly in high inflation milieus.
- Monetary reporting – Financial statements are reported in monetary terms, and non-monetary items like number of units or hours are not reported.
- Accounting policies and standards may misrepresent the reported information and solidify the comparison of companies' results worthless.
- The financial statements do not disclose future expectations. Fouché and Barnard (2013:675) critique the incorporation of market values, which could be seen as more forward looking, to be biased.

In this section, the results of the open, axial and selective coding, as part of the grounded theory research design are discussed, along with an analysis of these results.

Firstly, the AFP of the three companies are discussed to determine whether these measures are able to assist in decision-making and to identify their shortcomings (Section 7.2.2.1, page 204). This is followed by the results of the VFP analysis on the target companies' and its value to decision-making purposes (Section 7.2.2.2, page 206), along with the useful financial risk indicators for decision-making (Section 7.2.2.3, page 208), and the growth indicators for effective decision-making (Section 7.2.2.4, page 210), obtained from the open and axial coding. The results from the selective coding, and their effect (Section 7.2.3, page 212) are discussed next as well as the impact on financial decision-making (Section 7.3, page 226).

7.2.2.1 AFP measures

Financial performance measures were discussed in Section 3.4, page 52 being both meaningful and significant to make performance evaluation decisions. Decision-making performance evaluation is based on the company's financial position and performance. The AFP measures of the three companies were analysed and are summarised in Table 7-3.

Table 7-3: Summary of the results the Traditional accounting-based performance measures (AFP)

Financial performance measures Traditional accounting-based performance measures (AFP)												
		C1			*C2*			*C3*				
Code	*Measure*	*2014*	*2015*	*2016*	*2014*	*2015*	*2016*	*2014*	*2015*	*2016*	Mean	Maximum value	Minimum value
FP-AFP-ROA	ROA	16.7%	15.3%	6.3%	11.9%	2.0%	1.1%	2.3%	-3.0%	-0.2%	5.8%	16.7%	-3.0%
FP-AFP-ROE	ROE	16.2%	16.8%	20.3%	1054.0%	257.1%	-23.5%	80.0%	-127.3%	3.3%	144.1%	1054.0%	-127.3%
FP-AFP-EPS	EPS	$4.21	$3.89	$3.90	$7.91	$1.93	-$0.18	$200.09	-$0.32	$8.17	$25.51	$200.09	-$0.32
FP-AFP-P/E	P/E	12.5	8.7	18.1	11.0	36.6	-435.9	31.0	14.7	934.5	70.1	934.5	-435.9

Source(s): BP, 2014; Chevron, 2014; Sasol, 2014; BP, 2015; Chevron, 2015; Sasol, 2015; BP, 2016; Chevron, 2016; Sasol, 2016

Table 7-3 considered the four AFP measures; return on assets (ROA), return on equity (ROE), earnings per share (EPS) and price/earnings ratio (P/E) of the three companies; C1, C2, C3 over three financial periods, 2014 (previous) 2015 (current) and 2016 (future). Revealing a mean over the nine data periods of 5,8% for the ROA, as a potential investor only C1 has a greater ROA in 2016, the future period. Therefore, the potential investor's decision to invest is based on the ROA both C2 and C3 will not be considered as viable. On the other hand if the potential investor considers EPS as a criterion in the decision-making, C3 would be chosen above C1 or C2 as C3 has the highest EPS, $8.17 in 2016, which is also lower as the mean of $25.1.

7.2.2.2 VFP measures

As mentioned in Chapter 3 (Section 3.4, page 52) value creation supply stakeholders with valuable information for decision-making purposes. This study proposed the development of an integrated financial decision-making model based on lean accounting principles. It is therefore important to consider how VFP measures analyse companies' value for decision-making purposes. Table 7-4 summarises the four most commonly used VFP measures of the selected three companies.

Table 7-4 again indicates different decision-making opportunities available to the stakeholders. The decision of a stakeholder would be influenced by the VFP measure preferred to make decisions. If economic value added (EVA) is the preferred measure, C1 would be the choice, while if market value added (MVA) is the measurement of choice, C2 would be chosen because of the highest 2016 value. However, if the stakeholder considers the mean value of the cash flow return on investment (CFROI) (18.6%) C1 (24.1%) would be the obvious choice as it reported the highest CFROI for the future period.

Both Table 7-3 and Table 7-4 confirmed Lucouw's (2013:70) conclusion that only comparing the companies' performance information cannot form the *basis for decision-making*. This is evident for the different potential choices that the stakeholder could make. The literature review suggested that a holistic approach is necessary for decision-making (Section 3.5, page 66).

Table 7-4: Summary of the results the Modern value-based performance measures (VFP)

Financial performance measures Modern value-based performance measures (VFP)													
		C1			*C2*			*C3*					
Code	*Measure*	*2014*	*2015*	*2016*	*2014*	*2015*	*2016*	*2014*	*2015*	*2016*	Mean	Maximum value	Minimum value
FP-VFP-EVA	EVA	$234	-$133	-$1 505	$4 599	-$10 259	-$16 122	-$7 225	-$15 755	-$11 421	-$6 399	$4 599	-$16 122
FP-VFP-MVA	MVA	$17 140	$2 082	-$4 353	$58 152	$881	$62 963	-$229 319	$421 951	-$214 236	$12 807	$421 951	-$229 319
FP-VFP-CFROI	CFROI	25.9%	30.7%	24.1%	25.9%	16.0%	7.9%	21.2%	10.1%	5.7%	18.6%	30.7%	5.7%
FP-VFP-CVAi	CVA	$3 827	$4 962	$2 822	$47 017	$19 472	-$2 199	$43 443	$10 453	-$4 653	$13 905	$47 017	-$4 653

Source(s): BP, 2014; Chevron, 2014; Sasol, 2014; BP, 2015; Chevron, 2015; Sasol, 2015; BP, 2016; Chevron, 2016; Sasol, 2016

7.2.2.3 Financial risk indicators

Correia *et al*. (2015:5-9) identify the general objective of financial decision-models is the probing of a company's financial position and returns in relation to its risk. Chapter 3 (Section 3.5, page 66) pointed out the importance of risk indicators in the financial decision-making of different stakeholders. Financial risk indicators consist of capital and income sensitivity (IS) analysis. Capital sensitivity measures solvability and liquidity, while cover ratios report the IS. Table 7-5 summarises the findings of the financial risk indicators of the three investigated companies of three financial periods.

Table 7-5 reports three main indicator groups, each of these groups report the individual measures applicable to it. Solvability measures the financing structure or the so-called capital structure of a company. The finance structure consists of internal and external capital and is measured by five ratios; TSITA, TATL, ESTI, D/E and SHI. Liquidity pertains to the capability of a company to repay short-term commitments, timeously as it become due. The ratio concludes on the availability of cash in the near future after paying commitments. Koen *et al*. (1994:44); Correia (2015:5-16); Fouché and Barnard (2013:691) and Els *et al*. (2014:80) state that financiers and credit providers are especially interested in these ratios. Liquidity is being measured by determining the CR, QR, NIWC, DCP, CPP and IT.

Sensitivity of income makes use of different cover ratio, which evaluate the sensitivity of the profits of the company to external factors, it furthermore assess the relative safety of the company's profits. Sensitivity ratios will give the stakeholder an indication of the risk that dividends will not be declared or interest will not be paid. Income sensitivity is determined by SM, IC, PDC, ODC, and FCC of each of the three investigated companies.

Table 7-5: Summary of the results measuring the three companies' financial risk indicators

Financial Risk Indicators													
Capital Sensitivity													
Solvability													
		C1			***C2***			***C3***					
Code	***Measure***	***2014***	***2015***	***2016***	***2014***	***2015***	***2016***	***2014***	***2015***	***2016***	**Mean**	**Maximum value**	**Minimum value**
FR-CS-SO-TSITA	TSITA	0.1	0.1	0.1	-0.7	-0.7	-0.7	-0.2	-0.2	-0.2	-0.3	0.1	-0.7
FR-CS-SO-TATL	TATL	2.7	2.5	2.2	2.4	2.4	2.3	1.7	1.6	1.6	2.1	2.7	1.6
FR-CS-SO-ESTI	ESTI	1.0	1.0	1.0	2.0	2.0	2.0	1.1	1.1	1.2	1.4	2.0	1.0
FR-CS-SO-D/E	D/E	0.1	0.2	0.4	0.2	0.3	0.3	0.5	0.5	0.6	0.3	0.6	0.1
FR-CS-SO-SHI	SHI	1.7	2.2	3.7	-0.4	-0.5	-0.5	-1.6	-2.1	-2.4	-0.01	3.7	-2.4
Liquidity													
			C1			***C2***			***C3***				
Code	***Measure***	***2014***	***2015***	***2016***	***2014***	***2015***	***2016***	***2014***	***2015***	***2016***	**Mean**	**Maximum value**	**Minimum value**
FR-CS-LQ-CR	CR	2.5	2.6	2.6	1.3	1.3	0.9	1.4	1.3	1.2	1.7	2.6	0.9
FR-CS-LQ-QR	QR	1.8	2.0	2.0	1.1	1.1	0.8	1.1	1.0	0.9	1.3	2.0	0.8
FR-CS-LQ-NIWC	NIWC	51	40	39	8	16	18	10	7	1	21.1	50.9	0.8
FR-CS-LQ-DCP	DCP	52	53	59	30	36	47	32	37	41	43.0	59.2	30.5
FR-CS-LQ-CPP	CPP	110	128	168	58	71	86	52	71	105	94.3	168.3	51.9
FR-CS-LQ-IT	IT	3.6	3.2	2.8	18.6	10.9	10.1	11.8	10.1	8.3	8.8	18.6	2.8
Income Sensitivity													
			C1			***C2***			***C3***				
Code	***Measure***	***2014***	***2015***	***2016***	***2014***	***2015***	***2016***	***2014***	***2015***	***2016***	**Mean**	**Maximum value**	**Minimum value**
FR-IS-SM	SM	39.8%	43.4%	23.3%	38.6%	8.0%	4.2%	6.9%	-16.5%	-4.5%	0.2	0.4	-0.2
FR-IS-IC	IC	23.8	20.8	10.4	88.2	10.8	3.9	6.3	-7.4	-0.4	17.4	88.2	-7.4
FR-IS-PDC	PDC	43.1	33.3	15.3	0.0	0.0	0.0	2 001.5	-3 200.0	172.0	-103.9	2 001.5	-3 200.0
FR-IS-ODC	ODC	2.6	2.7	3.3	2.4	0.6	-0.1	0.7	-1.0	0.0	1.3	3.3	-1.0
FR-IS-FCC	FCC	1.6	1.7	1.3	1.6	1.1	1.0	1.1	0.9	1.0	1.3	1.7	0.9

Source(s): BP, 2014; Chevron, 2014; Sasol, 2014; BP, 2015; Chevron, 2015; Sasol, 2015; BP, 2016; Chevron, 2016; Sasol, 2016

From Table 7-5 it is clear that C1 are doing better than the mean of the three investigated companies' solvency. Considering this when a stakeholder needs to make a decision that is based on the solvency of a company, C1 may be the preferred choice. In this section the sensitivity of capital was considered that is measured by analysing the financial strength of the company. The solvability and liquidity measures were discussed and the importance to the related risk was emphased. Furthermore, IS was considered using the different cover ratios as explained by Koen *et al*. (1994:51) that evaluate the sensitivity of profits earned by the company to external factors.

7.2.2.4 Growth indicators

Analysing the growth in a company gives the stakeholders an indication of the intensity of operations over a number of years. The stakeholders will be able to use these growth indicators to predict the expected growth in several important ratios. The different ratios are calculated over a number of years to detect a trend within the company.

A trend is the general direction (Collins, 1986:924; Oxford, 2005:813) in which something develops (Oxford, 2005:813) or change (Oxford, 2005:813). Correia *et al*. (2011:5-12) explain that the trend will indicate the direction, rate and amount of change. Trends therefore indicate the phenomenon of a situation or reported information to the stakeholder and is an important factor (Correia *et al*., 2011:5-13) to consider in decision-making.

Effective decision-making considers the phenomenon of the growth indicators of a company. Table 7-6 contains the most common growth ratios that stakeholders can use to determine the potential future direction of the company.

Table 7-6: Growth indicators for effective decision-making

Growth Indicators												
		C1			*C2*			*C3*				
Code	*Measure*	*2014*	*2015*	*2016*	*2014*	*2015*	*2016*	*2014*	*2015*	*2016*	Mean	Maximum value	Minimum value
GI-GIS	GIS	1.6%	-17.1%	-26.4%	-8.9%	-35.2%	-15.2%	-6.7%	-37.0%	-17.9%	-18.1%	1.6%	-37.0%
GI-GIE	GIE	-6.6%	-7.7%	0.3%	-10.6%	-75.4%	-109.2%	-83.2%	-259.9%	-102.7%	-72.8%	0.3%	-259.9%
GI-GID	GID	19.8%	-13.0%	-17.3%	0.8%	0.8%	0.5%	7.5%	13.8%	-30.8%	-2.0%	19.8%	-30.8%
GI-GINAV	GINAV	6.1%	-1.7%	-10.6%	3.8%	-1.5%	-4.7%	-13.6%	28.4%	-1.6%	0.5%	28.4%	-13.6%
GI-CGR	CGR	40.0%	35.0%	34.2%	-1126.5%	-27.7%	-134.0%	-7.3%	-46.1%	-31.9%	-140.5%	40.0%	-1126.5%
GI-FRTFG	FRTFG	62.5	-817.5	-1 208.3	98.5	-6 676.4	-1 138.4	-1 843.7	-16 626.9	-3 029.2	-3 464.4	98.5	-16 626.9

Source(s): BP, 2014; Chevron, 2014; Sasol, 2014; BP, 2015; Chevron, 2015; Sasol, 2015; BP, 2016; Chevron, 2016; Sasol, 2016

Table 7-6 summarised the growth in sales (GIS), earnings (GIE), dividend (GID), net asset value (GINAV); critical growth rate (CGR); and the funds required to finance growth (FRTFG) of the three companies for the three financial periods. Looking at the findings is can be deduced that the sales of the three companies are decreasing over the financial period. This could be an area of concern that warrants further investigation. It seems that a general decline is observed throughout the industry. If a stakeholder therefore wants to consider growth in the decision that need to be taken none of the three companies would be considered and the stakeholder could look towards another company or industry. Considering only a specific indicator may ultimately cause the stakeholder to make an improper decision.

After considering the previous subsections it can be concluded that appropriate decision usefulness of financial accounting is only possible if the decision maker takes an all-encompassing view of all relevant information. Section 3.5 (page 66) proposed that stakeholders should base financial decision on a holistic view that includes the consideration of non-financial information and contemporary accounting developments. As indicated previously, non-financial indicators were not investigated. Lean accounting is considered as a contemporary accounting development. The previously mentioned propositions represent the emergent theoretical propositions based on the research findings. The researcher identified initial propositions based on pre-existing literature as suggested by the grounded theory and case study methodologies. These guiding propositions were modified according to the findings of the qualitative research effort. The next section explains how each of the guiding propositions was extended, removed or modified to reflect the findings.

7.2.3 Lean principles applied in the study

In this section, the results of the open, axial and selective coding, as part of the grounded theory research design and an analysis of these results are discussed. This study relied on the lean accounting principles, practices, and tools (PPT) of lean accounting that were identified in Chapter 4 (Section 4.4, page 77). These principles are highlighted below.

- Continuous waste eliminating transactions, processes and reports
- Value stream mapping (current and future state)

- Management control and continuous improvements
- Performance measurement linking metrics to process, value streams, company reporting to business strategy, target costing and continuous improvement
- Value stream performance boards containing break-through and continuous improvement information
- Box scores showing value stream performance that include value stream income statements
- Visual reporting of financial and non-financial performance measurements
- Primary reporting using visual performance boards; division plant, value stream, cell/process in production, product design, sale/marketing and administration
- Decision-making based on incremental cost and profitability analysis using value stream costing and box scores
- Box scores showing operational, financial and capacity changes from lean improvements
- Simple methods for inventory valuation without the requirement for perpetual inventory records and product costs

Section 4.5 (page 83) proposed the use of; value stream performance measurements, value stream box report, and VSFP as some of the lean accounting principles that will influence decision-making. These lean principles are discussed in the next section.

7.2.3.1 Value streams

Section 4.4 (page 77) explains the PPT of lean accounting, one of the key themes that that flow through four of the five principles is value streams. The three investigated companies speak freely in the annual reports of value streams, and even include segmental reports. The segmental reports can be seen as a limited form of value stream reporting. Value streams are helpful in waste elimination, management control and improvements, cost management, visualising of financial and non-financial reporting, planning and decision-making.

Value streams, according to Ramezani and Rezmeh (2014:44-45), will ultimately lead to increased profitability. The value stream of a company is the financial and operating activities that will contribute towards wealth creation for its shareholders. By using the annual reports of the three selected companies it was deduced that because the reports contain mentions of value streams and segmental reports the consolidated

financial statements could be used as it represents the value stream. By providing stakeholders with clear and timeous information that are visual, lean accounting make use of box reports.

7.2.3.2 Box reports

It was deduced in Section 4.5.2 (page 86) that the box report focusses stakeholders' attention on areas that need improvement. The box report measure performance evaluation areas at three levels namely; operating, capacity and financial. The elements included in the box report were derived from the selective coding process as discussed in Section 5.5.4.3 (page 129). Tables 7-3 to 7-6 (page 205 to page 211) indicated the results obtained from the traditional financial decision-making models. Table 7-7 summarise the results of the integrated financial decision-making model using lean accounting principles by applying it to the box report. Table 7-7 consists of two distinct parts, the first part report the traditional model findings obtained from Tables 7-3 to 7-6 (page 205 to page 211) using the box report format no adjustments were made to any of the results. The adjustments was only cosmetic by reporting the findings of Tables 7-3 to 7-6 (page 205 to page 211) into the suggested box report format as explained in Section 4.5.2 (page 86). It can be noted from Table 7-7 that the results are now being grouped into the three performance evaluation areas of operating, capacity and financial. Each of these performance evaluation areas consider the different elements which was discussed in Section 5.5.4.3 (page 129).

The second part of Table 7-7 reports the lean model findings, using the box report (Section 4.5.2, page 86) and combining it with the value stream performance report (Section 4.5.3, page 88). The results of the lean model were calculated using the results of the document analysis (Table 7-2, page 199) and adjusting it with the requirements as deduced in Section 4.5.3 (page 88). The recalculated results are reported in Table 7-8 (page 223). Comparing the results between the traditional performance reports (traditional accounting) Table 7-9 (page 224) and the value stream performance report (lean accounting) Table 7-8 (page 223) it indicate the necessity to make some adjustments to the results of the document analysis in Table 7-2 (page 199). The adjustments can be summarised as follows:

- Critical growth rate
- Funds required to finance growth

- Return on assets
- Fixed charged cover
- Interest cover
- Ordinary dividend cover
- Preference dividend cover
- Safety margin ratio
- Earnings per share
- Return on equity
- Cash flow return on investment
- Economic value added

The adjustments emanated from the results of the value stream report (Table 7-8, page 223). In calculating the performance report results, traditional accounting subtracts cost of sales from sales to arrive at the gross profit. The cost includes, purchases and purchase related cost as well as adjusting for changes in inventory. However lean accounting does not calculate a cost of sales like traditional accounting. Lean accounting's performance report subtracts material and conversion cost from sales to determine a value stream gross profit. It should be clearly noted that the calculated material and conversion cost does not adjust for any change in inventory. The material and conversion cost represent the production cost but exclude labour cost and any adjustments in the change of inventory. The adjustments in the change of inventory are being reported together with employees cost and expenses, where the traditional accounting performance report reflect other costs.

Table 7-7: Box report: Using results of the integrated financial decision-making model using lean accounting principles

Consolidated findings		Traditional model findings								
		C1			C2			C3		
		2014	2015	2016	2014	2015	2016	2014	2015	2016
Performance evaluation areas	Element	Previous period	Current period	Future period	Previous period	Current period	Future period	Previous period	Current period	Future period
Operating	Creditors payment period	110	128	168	58	71	86	52	71	105
	Current ratio	2.5	2.6	2.6	1.3	1.3	0.9	1.4	1.3	1.2
	Debtors collection period	52	53	59	30	36	47	32	37	41
	Inventory turnover	3.6	3.2	2.8	18.6	10.9	10.1	11.8	10.1	8.3
	Net investment in working capital	51	40	39	8	16	18	10	7	1
	Quick ratio	1.8	2.0	2.0	1.1	1.1	0.8	1.1	1.0	0.9
	Debt/Equity ratio	0.1	0.2	0.4	0.2	0.3	0.3	0.5	0.5	0.6
	Equity to Total Shareholders' Interest	1.0	1.0	1.0	2.0	2.0	2.0	1.1	1.1	1.2
	Shareholders' Interest	1.7	2.2	3.7	-0.4	-0.5	-0.5	-1.6	-2.1	-2.4
	Total Assets to Total Liabilities	2.7	2.5	2.2	2.4	2.4	2.3	1.7	1.6	1.6
	Total Shareholders ‘interest to Total Assets	0.1	0.1	0.1	-0.7	-0.7	-0.7	-0.2	-0.2	-0.2
	Critical growth rate	40.0%	35.0%	34.2%	-1126.5%	-27.7%	-134.0%	-7.3%	-46.1%	-31.9%
	Funds required to finance growth	62.5	-817.5	-1 208.3	98.5	-6 676.4	-1 138.4	-1 843.7	-16 626.9	-3 029.2

Table 7-7: Box report: Using results of the integrated financial decision-making model using lean accounting principles (continued)

Consolidated findings		Traditional model findings								
		C1			C2			C3		
		2014	2015	2016	2014	2015	2016	2014	2015	2016
Performance evaluation areas	Element	Previous period	Current period	Future period	Previous period	Current period	Future period	Previous period	Current period	Future period
Capacity	Return on Assets	16.7%	15.3%	6.3%	11.9%	2.0%	1.1%	2.3%	-3.0%	-0.2%
	Fixed charged cover	1.6	1.7	1.3	1.6	1.1	1.0	1.1	0.9	1.0
	Interest cover	23.8	20.8	10.4	88.2	10.8	3.9	6.3	-7.4	-0.4
	Ordinary dividend cover	2.6	2.7	3.3	2.4	0.6	-0.1	0.7	-1.0	0.0
	Preference dividend cover	43.1	33.3	15.3	0.0	0.0	0.0	2 001.5	-3 200.0	172.0
	Safety Margin Ratio	39.8%	43.4%	23.3%	38.6%	8.0%	4.2%	6.9%	-16.5%	-4.5%
	Growth in dividends	19.8%	-13.0%	-17.3%	0.8%	0.8%	0.5%	7.5%	13.8%	-30.8%
	Growth in sales	1.6%	-17.1%	-26.4%	-8.9%	-35.2%	-15.2%	-6.7%	-37.0%	-17.9%

Table 7-7: Box report: Using results of the integrated financial decision-making model using lean accounting principles (continued)

Performance evaluation areas	Element	Previous period	Current period	Future period	Previous period	Current period	Future period	Previous period	Current period	Future period
Financial	Earnings per Share	$4.21	$3.89	$3.90	$7.91	$1.93	-$0.18	$200.09	-$0.32	$8.17
	Price earnings ratio	12.5	8.7	18.1	11.0	36.6	-435.9	31.0	14.7	934.5
	Return on Equity	16.2%	16.8%	20.3%	1054.0%	257.1%	-23.5%	80.0%	-127.3%	3.3%
	Cash Flow Return on Investment	25.9%	30.7%	24.1%	25.9%	16.0%	7.9%	21.2%	10.1%	5.7%
	Cash Value Added	$3 827	$4 962	$2 822	$47 017	$19 472	-$2 199	$43 443	$10 453	-$4 653
	Economic Value Added	$234	-$133	-$1 505	$4 599	-$10 259	-$16 122	-$7 225	-$15 755	-$11 421
	Market Value Added	$17 140	$2 082	-$4 353	$58 152	$881	$62 963	-$229 319	$421 951	-$214 236
	Growth in earnings	-6.6%	-7.7%	0.3%	-10.6%	-75.4%	-109.2%	-83.2%	-259.9%	-102.7%
	Growth in net asset value	6.1%	-1.7%	-10.6%	3.8%	-1.5%	-4.7%	-13.6%	28.4%	-1.6%

Table 7-7: Box report: Using results of the integrated financial decision-making model using lean accounting principles (continued)

Consolidated Findings		Lean model findings								
		C1			C2			C3		
		2014	2015	2016	2014	2015	2016	2014	2015	2016
Performance evaluation areas	Element	Previous period	Current period	Future period	Previous period	Current period	Future period	Previous period	Current period	Future period
Operating	Creditors payment period	110	128	168	58	71	86	52	71	105
	Current ratio	2.5	2.6	2.6	1.3	1.3	0.9	1.4	1.3	1.2
	Debtors collection period	52	53	59	30	36	47	32	37	41
	Inventory turnover	3.6	3.2	2.8	18.6	10.9	10.1	11.8	10.1	8.3
	Net investment in working capital	51	40	39	8	16	18	10	7	1
	Quick ratio	1.8	2.0	2.0	1.1	1.1	0.8	1.1	1.0	0.9
	Debt/Equity ratio	0.1	0.2	0.4	0.2	0.3	0.3	0.5	0.5	0.6
	Equity to Total Shareholders' Interest	1.0	1.0	1.0	2.0	2.0	2.0	1.1	1.1	1.2
	Shareholders' Interest	1.7	2.2	3.7	-0.4	-0.5	-0.5	-1.6	-2.1	-2.4
	Total Assets to Total Liabilities	2.7	2.5	2.2	2.4	2.4	2.3	1.7	1.6	1.6
	Total Shareholders ‘interest to Total Assets	0.1	0.1	0.1	-0.7	-0.7	-0.7	-0.2	-0.2	-0.2
	Critical growth rate	46.9%	45.4%	3.9%	-1 118.4%	-27.0%	-139.9%	-7.3%	-46.1%	-31.9%
	Funds required to finance growth	59.5	-759.5	-1 560.9	-99.2	-6 607.4	-972.0	-1 710.0	-16 626.9	-3 029.2

Table 7-7: Box report: Using results of the integrated financial decision-making model using lean accounting principles (continued)

Consolidated findings		Lean model findings								
		C1			C2			C3		
		2014	2015	2016	2014	2015	2016	2014	2015	2016
Performance evaluation areas	Element	Previous period	Current period	Future period	Previous period	Current period	Future period	Previous period	Current period	Future period
Capacity	Return on Assets	18.2%	10.4%	4.0%	11.8%	1.7%	0.1%	-5.9%	-6.9%	-18.8%
	Fixed charged cover	1.7	1.4	1.2	1.6	1.1	1.0	0.8	0.8	1.1
	Interest cover	26.3	14.6	6.8	88.9.3	10.1	1.4	-14.9	-15.4	5.4
	Ordinary dividend cover	2.6	2.7	1.2	2.4	0.6	0.1	0.7	-1.0	0.0
	Preference dividend cover	43.1	33.3	15.3	0.0	0.0	0.0	2 001.5	-3 200.0	172.0
	Safety Margin Ratio	24.0%	23.7%	-8.7%	58.6%	20.6%	17.6%	73.5%	57.5%	61.5%
	Growth in dividends	19.8%	-13.0%	-17.3%	0.8%	0.8%	0.5%	7.5%	13.8%	-30.8%
	Growth in sales	1.6%	-17.1%	-26.4%	-8.9%	-35.2%	-15.2%	-6.7%	-37.0%	-17.9%

Table 7-7: Box report: Using results of the integrated financial decision-making model using lean accounting principles (continued)

Consolidated findings		Lean model findings								
		C1			C2			C3		
		2014	2015	2016	2014	2015	2016	2014	2015	2016
Performance evaluation areas	Element	Previous period	Current period	Future period	Previous period	Current period	Future period	Previous period	Current period	Future period
Financial	Earnings per Share	$4.21	$3.89	$1.42	$7.91	$1.93	$0.18	$199.99	-$0.32	$8.12
	Price earnings ratio	13.9	9.5	19.0	14.2	46.7	667.1	0.2	-98.2	4.6
	Return on Equity	16.2%	16.8%	7.4%	1 054.0%	257.1%	23.5%	80.0%	-127.3%	3.2%
	Cash Flow Return on Investment	25.9%	30.7%	24.1%	25.9%	16.0%	7.9%	21.2%	10.1%	5.7%
	Cash Value Added	$3 827	$4 962	$2 822	$47 017	$19 472	-$2 199	$43 443	$10 453	-$4 653
	Economic Value Added	$234	-$133	-$1 505	$4 599	-$10 259	-$15 260	-$7 225	-$15 755	-$11 421
	Market Value Added	$17 140	$2 082	-$4 353	$58 152	$881	$62 963	-$229 319	$421 951	-$214 236
	Growth in earnings	-6.6%	-7.7%	0.3%	-10.6%	-75.4%	-109.2%	-83.2%	-259.9%	-102.7%
	Growth in net asset value	6.1%	-1.7%	-10.6%	3.8%	-1.5%	-4.7%	-13.6%	28.4%	-1.6%

Source: Own research

The box report was explained in Section 4.5.2; page 86. The box report evaluates three performance evaluation areas (PEA) over three financial periods. Table 7-7 reported the results of the traditional financial decision-making models which were adjusted to fit the box report as well as indicating the results of the integrated financial decision-making model using lean accounting principles. It is evident from the comparison of the results from Table 7-7 that there are differences in the reported findings. The main reason for the differences is due the differences that exist in determining the retained income. These differences will become more evident when the traditional performance report is compared with the value stream performance report.

7.2.3.3 Value streams performance measures (VSFP)

Table 7-8 indicates the result of the value stream performance report of the three studied companies and Table 7-9 indicates the result of the traditional performance report (TPR) of the three studied companies. Note from Table 7-8 that inventory does not form part of the value stream's gross profit. This exclusion of inventory is the reason many opposers of lean do not want to convert to lean accounting.

Considering the results between the two performance reports as indicated in Table 7-8 and Table 7-9 both the gross profit percentage (GP%) and the net profit percentage (NP%) tell an interesting story. Table 7-10 compare the results of the GP% between the traditional performance report (TPR) and value stream performance report (VSPR) of the three studied companies.

Table 7-8: The result of the value stream performance report

Lean accounting									
Value stream performance reports (VSPR)	**C1**			**C2**			**C3**		
Measure	**2014 US$ m**	**2015 US$ m**	**2016 US$ m**	**2014 US$ m**	**2015 US$ m**	**2016 US$ m**	**2014 US$ m**	**2015 US$ m**	**2016 US$ m**
Sales	19 508	16 181	11 911	200 494	129 925	110 215	353 568	222 894	183 008
Material & conversion cost	8 361	7 615	5 196	119 546	69 922	60 236	292 765	169 021	128 706
Value stream gross profit(VSGP)	**11 147**	**8 566**	**6 715**	**80 948**	**60 003**	**49 979**	**60 803**	**53 873**	**54 302**
Employee cost	2 750	1 930	1 647	10 973	12 214	10 687	13 936	12 928	11 233
Expenses	3 761	3 184	3 683	38 290	42 623	37 294	51 313	53 094	39 986
Opening Inventory	2 289	2 515	1 902	6 380	6 505	6 334	29 231	18 373	14 142
Closing Inventory	2 515	1 902	1 618	6 505	6 334	5 419	18 373	14 142	17 655
Inventory change	-226	613	284	-125	171	915	10 858	4 231	-3 513
GP	**10 921**	**9 179**	**6 999**	**80 823**	**60 174**	**50 894**	**71 661**	**58 104**	**50 789**
EBITA	**4 862**	**2 839**	**1 101**	**31 810**	**4 995**	**1 083**	**-15 304**	**-16 380**	**6 596**
Calculated NOPAT	2 928	2 722	1 035	19 310	4 710	431	4 003	-6 400	172
Calculated EATS	2 928	2 722	1 035	19 310	4 710	431	4 003	-6 400	172
Calculated EATOSH	2 860	2 640	967	19 310	4 710	431	4 001	-6 402	171
Calculated Retained Income	**1 751**	**1 675**	**169**	**11 318**	**-3 282**	**-7 601**	**-1 849**	**-13 061**	**-4 440**
VSGP%	57%	53%	56%	40%	46%	45%	17%	24%	30%
GP%	56%	57%	59%	40%	46%	46%	20%	26%	28%
NP% (Before tax)	25%	17%	9%	16%	3%	0%	-5%	-8%	3%

Source(s): Maskell and Baggaley, 2004:145 adjusted; BP, 2014; Chevron, 2014; Sasol, 2014; BP, 2015; Chevron, 2015; Sasol, 2015; BP, 2016; Chevron, 2016; Sasol, 2016

Table 7-9: The result of the traditional performance report

Traditional accounting									
Traditional performance reports (TPR)	**C1**			**C2**			**C3**		
Measure	**2014 US$ m**	**2015 US$ m**	**2016 US$ m**	**2014 US$ m**	**2015 US$ m**	**2016 US$ m**	**2014 US$ m**	**2015 US$ m**	**2016 US$ m**
Sales	19 508	16 181	11 911	200 494	129 925	110 215	353 568	222 894	183 008
Less Cost of Sales	**8 587**	**7 002**	**4 912**	**119 671**	**69 751**	**59 321**	**281 907**	**164 790**	**132 219**
Opening Inventory	2 289	2 515	1 902	6 380	6 505	6 334	29 231	18 373	14 142
Purchases	8 813	6 389	4 628	119 796	69 580	58 406	271 049	160 559	135 735
Closing Inventory	2 515	1 902	1 618	6 505	6 334	5 419	18 373	14 142	17 655
GP	**10 921**	**9 179**	**6 999**	**80 823**	**60 174**	**50 894**	**71 661**	**58 104**	**50 789**
Other Costs	**6 511**	**5 114**	**5 330**	**49 263**	**54 837**	**47 981**	**65 249**	**66 022**	**51 219**
EBITA	**4 410**	**4 065**	**1 669**	**31 560**	**5 337**	**2 913**	**6 412**	**-7 918**	**-430**
NOPAT	2 928	2 722	1 035	19 310	4 710	-431	4 003	-6 400	172
EATS	2 928	2 722	1 035	19 310	4 710	-431	4 003	-6 400	172
EATOSH	2 860	2 640	2 648	19 310	4 710	-431	4 003	-6 402	172
Retained Income	**1 567**	**1 393**	**1 152**	**11 310**	**-3 409**	**-8 532**	**-1 849**	**-13 061**	**-4 440**
GP%	56%	57%	59%	40%	46%	46%	20%	26%	28%
NP% (Before tax)	22%	24%	13%	16%	4%	3%	2%	-4%	-1%

Source(s): BP, 2014; Chevron, 2014; Sasol, 2014; BP, 2015; Chevron, 2015; Sasol, 2015; BP, 2016; Chevron, 2016; Sasol, 2016

Table 7-8 reported the results of a lean accounting-based value stream performance report while Table 7-9 summarised the results of the traditional accounting-based performance reports. Considering the outlay of the two reports it is necessary to highlight some key points lean accounting determine value stream gross profit, which are calculated by subtracting material and conversion cost, which exclude employee cost. Furthermore, lean accounting does not consider inventory as part of the cost of sales like traditional accounting does, instead inventory are considered a period cost. Table 7-10 compare the GP% of the TPR and VSPR.

Table 7-10: Comparison between the results of the GP% using TPR and VSPR

	C1			C2			C3		
	2014 US$ m	2015 US$ m	2016 US$ m	2014 US$ m	2015 US$ m	2016 US$ m	2014 US$ m	2015 US$ m	2016 US$ m
TPR GP%	56%	57%	59%	40%	46%	46%	20%	26%	28%
VSPR GP%	56%	57%	59%	40%	46%	46%	20%	26%	28%

Source: Own research

In Table 7-10 the GP% stays relatively consistent, mainly because of the adjustment in inventory that was done in both performance reports. Table 7-11 compares the results of the GP% of the TPR and the VSPR% of the VSPR on the three studied companies. Comparing the value stream gross profit percentage (VSGP%) with the GP% revealed differences.

Table 7-11: Comparison between the GP% and VSPR%

	C1			C2			C3		
	2014 US$ m	2015 US$ m	2016 US$ m	2014 US$ m	2015 US$ m	2016 US$ m	2014 US$ m	2015 US$ m	2016 US$ m
TPR GP%	56%	57%	59%	40%	46%	46%	20%	26%	28%
VSPR VSGP%	57%	53%	56%	40%	46%	45%	17%	24%	30%

Source: Own research

Table 7-12 compares the results of the Net profit before tax percentage (NPBT%) between the TPR and VSPR of the three studied companies.

Table 7-12: Comparison between the results of the NPBT% using TPR and VSR

	C1			C2			C3		
	2014 US$ m	2015 US$ m	2016 US$ m	2014 US$ m	2015 US$ m	2016 US$ m	2014 US$ m	2015 US$ m	2016 US$ m
TPR NPBT%	22%	24%	13%	16%	4%	3%	2%	-4%	-1%
VSPR NPBT%	25%	17%	9%	0%	3%	0%	-5%	-8%	-27%

Source: Own research

It is clearly evident from Table 7-12 that the financial performance of companies would significantly differ between traditional accounting and lean accounting, which indicates that more conservative results are obtained when lean accounting are applied.

7.3 The impact on financial decision-making

In the development of the integrated financial decision-making model using lean accounting principles, it became necessary to consider how different stakeholders will be influenced by financial and qualitative data. The developed financial decision-making model needs to assign some score to the analysed company. The assignment of a score is necessary in order to see whether the suggested financial decision-making model, will influence the decision that will be taken by a stakeholder.

It is suggested that each of the performance evaluation areas that were identified during the coding process bemeasured in terms of the traditional and newly developed financial decision-making model. Each of the three measured companies was evaluated against the following score set. The score set is calculated for both the traditional and newly developed financial decision-making modes to be used to determine whether there is an influence between the models. The results of each are shown in Table 7-17 (page 244), the traditional financial decision-making models and Table 7-18 (page 247), the integrated financial decision-making model using lean

accounting principles. In order to determine a final score the following equation was developed:

∑PEA = [0.33333OI x (VL,L,M,H,VH)] + [0,33333CI x (VL,L,M,H,VH)] + [0,33333FI x (VL,L,M,H,VH)]

Where:

∑PEA = Sum of all three performance evaluation areas

OI = Operating performance evaluation area

CI = Capacity performance evaluation area

FI = Financial performance evaluation area

VL = Very low

L = Low

M = Medium

H = High

VH = Very high

A partial score is computed for each of the elements within each of the three performance evaluation areas. The total score is attained by multiplying the partial scores with each one's weight. Weights are determined by applying an equal value to each of the elements of the performance evaluation area. For example Creditors payment period (2014) 3.85 in Table 7-17 (page 244) is calculated as follows: taking the indicator value (Table 7-15, page 237) 50 and dividing it by 13, as there are 13 quantitative elements that were identified as operating performance areas, 50 ÷ 13 = 3.85.

Performance evaluation area OI consists of 13 quantitative elements, each element will have a weight of $^{1}/_{13}$ or 7,69231%, CI elements weighs $^{1}/_{8}$ or 12,50000%, whole FI elements weigh $^{1}/_{9}$ or 11,11111%. The above-mentioned principle will apply to each of the elements of the PEA, the final score will consists of 0,33333OI + 0,33333CI + 0,33333FI.

Using the financial and non-financial data to determine the score of a company, the model calculate the company's score based on determining value ranges for each

element and then each range is assigned a score. This method has been successfully been applied in studies done by Zarkic Joksimovic (2005) and Radevic and Suknovic (2008). The rational is that should and element falls within a predetermined value range a predefined score are assigned to it. The total score for each of the PEA's is determined by adding the weighted sum of all elements. The final score is obtained by multiplying each of the PEA's by 0,33333 and then adding the results.

Table 7-13 are the predetermined value range of each of the elements. Table 7-13 is grouped into the three PEA's, with each of the PEA's consisting of the elements that make up the PEA.

Table 7-13: Value ranges of indicators

Performance evaluation areas	Element	Minimum value	Maximum value	Score
Operating	Creditors payment period	51.94	80.03	100
		81.03	109.13	75
		110.13	138.22	50
		139.22	167.31	25
		168.31	-	0
	Current ratio	0.93	1.34	0
		1.35	1.76	25
		1.77	2.17	50
		2.18	2.59	75
		2.60	-	100
	Debtors collection period	30.47	37.56	100
		37.66	44.75	75
		44.85	51.94	50
		52.04	59.13	25
		59.23	-	0
	Inventory turnover	2.79	6.64	100
		6.75	10.59	75
		10.70	14.55	50
		14.66	18.51	25
		18.62	-	0
	Net investment in working capital	0.83	13.25	100
		13.35	25.77	75
		25.87	38.29	50
		38.39	50.81	25
		50.91	-	0
	Quick ratio	0.76	0.98	0
		1.08	1.29	25
		1.39	1.61	50
		1.71	1.93	75
		2.03	-	100

Table 7-13: Value ranges of indicators (continue)

Performance evaluation areas	Element	Minimum value	Maximum value	Score
Operating	Debt/Equity ratio	0.15	0.26	100
		0.27	0.37	75
		0.38	0.49	50
		0.50	0.61	25
		0.62	-	0
	Equity to Total Shareholders' Interest	1.00	1.15	0
		1.25	1.40	25
		1.50	1.65	50
		1.75	1.90	75
		2.00	-	100
	Shareholders' Interest	-2.44	-0.92	0
		-0.91	0.61	25
		0.62	2.14	50
		2.15	3.66	75
		3.67	-	100
	Total Assets to Total Liabilities	1.58	1.84	0
		1.85	2.11	25
		2.12	2.38	50
		2.39	2.65	75
		2.66	-	100
	Total Shareholders ‘interest to Total Assets	-0.69	-0.50	0
		-0.49	-0.30	25
		-0.29	-0.10	50
		-0.09	0.10	75
		0.11	-	100
	Critical growth rate	-11.26	-8.34	0
		-8.33	-5.41	25
		-5.40	-2.47	50
		-2.46	0.46	75
		0.47	-	100

Table 7-13: Value ranges of indicators (continue)

Performance evaluation areas	Element	Minimum value	Maximum value	Score
Operating	Funds required to finance growth	-16626.94	-12445.60	0
		-12445.59	-8264.25	25
		-8264.24	-4082.90	50
		-4082.89	98.45	75
		98.46	-	100
Capacity	Return on Assets	-0.19	-0.11	0
		-0.10	-0.01	25
		0.00	0.08	50
		0.09	0.17	75
		0.18	-	100
	Fixed charged cover	0.77	1.00	0
		1.01	1.25	25
		1.26	1.49	50
		1.50	1.74	75
		1.75	-	100
	Interest cover	-15.38	10.49	0
		10.50	36.38	25
		36.39	62.26	50
		62.27	88.15	75
		88.16	-	100
	Ordinary dividend cover	-1.46	-0.28	0
		-0.27	0.92	25
		0.93	2.11	50
		2.12	3.31	75
		3.32	-	100
	Preference dividend cover	-3200.00	-1899.64	0
		-1899.63	-599.26	25
		-599.25	701.12	50
		701.13	2001.49	75
		2001.50	-	100

Table 7-13: Value ranges of indicators (continue)

Performance evaluation areas	Element	Minimum value	Maximum value	Score
Capacity	Safety Margin Ratio	-0.16	0.05	0
		0.06	0.28	25
		0.29	0.50	50
		0.51	0.73	75
		0.74	-	100
	Growth in dividends	-0.31	-0.19	0
		-0.18	-0.06	25
		-0.05	0.06	50
		0.07	0.19	75
		0.20	-	100
	Growth in sales	-0.37	-0.28	0
		-0.27	-0.19	25
		-0.18	-0.09	50
		-0.08	0.01	75
		0.02	-	100
Financial	Earnings per Share	-4.77	46.43	0
		46.44	97.65	25
		97.66	148.86	50
		148.87	200.08	75
		200.09	-	100
	Price earnings ratio	-435.93	-93.33	0
		-93.32	249.28	25
		249.29	591.88	50
		591.89	934.49	75
		934.50	-	100
	Return on Equity	-6.36	-2.15	0
		-2.14	2.08	25
		2.09	6.30	50
		6.31	10.53	75
		10.54	-	100

Table 7-13: Value ranges of indicators (continue)

Performance evaluation areas	Element	Minimum value	Maximum value	Score
Financial	Cash Flow Return on Investment	0.06	0.11	0
		0.12	0.17	25
		0.18	0.23	50
		0.24	0.30	75
		0.31	-	100
	Cash Value Added	-4653.08	8264.38	0
		8264.39	21181.84	25
		21181.85	34099.31	50
		34099.32	47016.77	75
		47016.78	-	100
	Economic Value Added	-26369.75	-18627.51	0
		-18627.50	-10885.26	25
		-10885.25	-3143.01	50
		-3143.00	4599.24	75
		4599.25	-	100
	Market Value Added	-229319.37	-66501.74	0
		-66501.73	96315.89	25
		96315.90	259133.53	50
		259133.54	421951.17	75
		421951.18	-	100
	Growth in earnings	-2.60	-1.96	0
		-1.95	-1.31	25
		-1.30	-0.66	50
		-0.65	-0.01	75
		0.00	-	100
	Growth in net asset value	-0.14	-0.04	0
		-0.03	0.06	25
		0.07	0.17	50
		0.18	0.27	75
		0.28	-	100

Source: Own research

From Table 7-13 it can be seen that the elements are divided into five ranges, which consist of a minimum value to a maximum value. The minimum to the maximum values refer to the range value. Each of these range values are allocated a predefined score from 0 to 100. The predefined scores are as follows: VL = 0; L = 25; M = 50; H = 75; and VH = 100. Table 7-13 indicates the following scores when considering Cash Flow Return on Investment; no score will be recorded if the minimum value is 0.06 and the maximum value is 0.11, a score of 25 will be allocated if the minimum value is 0.12 and the maximum value is 0.17. A value between 0.18 and 0.23, will earn a score of 50, while a score of 75 will be derived if the minimum value is 0.24 and the maximum value is 0.30, while any value greater than 31 will result in a score of 100. The stakeholder responsible for making a decision will ultimately decide whether the resulted score can be accepted or not.

The range values were determined by combining the tested results obtained from the traditional financial decision-making models as well as the newly developed financial decision-making model using lean accounting principles. These values should be set by the stakeholders involved in the decision-making. The determined values will depend on determining the minimum, maximum and mean values of the observed companies. Table 7-14 illustrates the statistical summary that was obtained by considering the PEA's elements of the three measured companies, over three financial periods. The table summarised the results in the element, mean, maximum, minimum value range, standard deviation and interval.

Table 7-14: Statistical summary

Performance evaluation areas	Element	Mean	Maximum value	Minimum value	Range	Std Deviation	Interval
Operating	Creditors payment period	94.30	168.31	51.94	116.36	36.41	29.09
	Current ratio	1.68	2.60	0.93	1.67	0.66	0.42
	Debtors collection period	43.05	59.23	30.47	28.77	9.87	7.19
	Inventory turnover	8.82	18.58	2.79	15.78	4.95	3.95
	Net investment in working capital	21.15	50.91	0.83	50.08	17.27	12.52
	Quick ratio	1.31	2.03	0.76	1.27	0.48	0.32
	Debt/Equity ratio	0.35	0.62	0.15	0.47	0.16	0.12
	Equity to Total Shareholders' Interest	1.38	2.00	1.00	1.00	0.45	0.25
	Shareholders' Interest	-0.01	3.67	-2.44	6.11	2.02	1.53
	Total Assets to Total Liabilities	2.15	2.66	1.58	1.07	0.41	0.27
	Total Shareholders ‘interest to Total Assets	-0.25	0.11	-0.69	0.80	0.33	0.20
	Critical growth rate	-0.83	0.47	-11.26	11.73	2.66	2.93
	Funds required to finance growth	-3629.11	98.46	-16626.94	16725.40	5115.04	4181.35

Table 7-14: Statistical summary (continue)

Performance evaluation areas	Element	Mean	Maximum value	Minimum value	Range	Std Deviation	Interval
Capacity	Return on Assets	0.03	0.18	-0.19	0.37	0.09	0.09
	Fixed charged cover	1.19	1.75	0.77	0.98	0.31	0.24
	Interest cover	10.72	88.16	-15.38	103.54	22.47	25.88
	Ordinary dividend cover	0.93	3.32	-1.46	4.78	1.46	1.19
	Preference dividend cover	-103.87	2001.50	-3200.00	5201.50	1291.68	1300.38
	Safety Margin Ratio	0.27	0.74	-0.16	0.90	0.27	0.22
	Growth in dividends	-0.02	0.20	-0.31	0.51	0.15	0.13
	Growth in sales	-0.18	0.02	-0.37	0.39	0.13	0.10
Financial	Earnings per Share	24.68	200.09	-4.77	204.86	63.88	51.22
	Price earnings ratio	70.58	934.50	-435.93	1370.43	290.52	342.61
	Return on Equity	0.52	10.54	-6.36	16.90	3.11	4.23
	Cash Flow Return on Investment	0.19	0.31	0.06	0.25	0.09	0.06
	Cash Value Added	13904.92	47016.78	-4653.08	51669.86	18534.18	12917.46
	Economic Value Added	-8071.13	4599.25	-26369.75	30969.00	8093.59	7742.25
	Market Value Added	12806.81	421951.18	-229319.37	651270.55	651270.55	162817.64
	Growth in earnings	-0.73	0.00	-2.60	2.60	0.81	0.65
	Growth in net asset value	0.01	0.28	-0.14	0.42	0.12	0.10

Source: Own research

Using the results obtained and reported in Table 7-14, the range values in Table 7-13 were determined and populated. In order to clarify this take an example, using Table 7-13, consider the FI's PEA element, Price earnings ratio. This is the range value for the price earnings ratio of the three measured companies for a three year period. The highest value reported or then the maximum value is 934.50 while the lowest reported value or the minimum value is -435.93, while the range is 1370.43 with an interval of 342.61. This results in element, Price earnings ratio having five range values. The score of 0 lay between the minimum value of -435.93 and the maximum value of 93.33. A score of 25 will fall between -93.32 and 249.28, while a score of 50 can be found between 249.29 and 591.88. The value range between 591.89 and 934.49 will yield a score of 75, and finally, a price earnings of greater or equal to 934 will score 100. After the range values were determined for each of the PEA elements the indicator values was determined for each of the three measured companies for all three financial periods.

The indicators' values were determined for both the traditional financial decision-making models as well as the newly developed integrated financial decision-making model using lean accounting principles. The indicator values are disclosed separately in Table 7-15 and Table 7-16. Table 7-15 indicates the value per company obtained by applying traditional models, while the integrated model using lean accounting principles are summarised in Table 7-16. Both tables reflect the results of all the elements of the three PEA's. The indicator values have been determined by referring to Table 7-13 and by then assigning a value to the result obtained from each of the elements. If the Return on Assets of C1 of 2014 is considered as an example, the indicator value for the traditional models are reported as 75 and 100 for the newly developed lean model. The reason is that the traditional calculated Return on Assets amounts to 16.7% or 0.167 that falls within the range of 0.09, minimum value, and 0.17, maximum value that result in a 75 score, as indicated in Table 7-13. The calculated Return on Assets, using the newly developed financial decision-making model using lean accounting principles results in 18.2% or 0.182 that falls within the range of 0.18, minimum value that is scored at 100, in Table 7-13.

Table 7-15 Indicator values per company obtained by applying traditional models

		C1			C2			C3		
Performance evaluation areas	**Element**	**Previous period 2014**	**Current period 2015**	**Future period 2016**	**Previous period 2014**	**Current period 2015**	**Future period 2016**	**Previous period 2014**	**Current period 2015**	**Future period 2016**
Operating	Creditors payment period	50	50	0	100	100	75	100	100	75
	Current ratio	75	100	100	0	0	0	25	0	0
	Debtors collection period	25	25	0	100	100	50	100	100	75
	Inventory turnover	100	100	100	0	75	50	50	75	75
	Net investment in working capital	0	25	25	100	75	75	100	100	100
	Quick ratio	75	100	100	25	25	0	25	25	0
	Debt/Equity ratio	100	100	50	100	100	75	50	25	0
	Equity to Total Shareholders' Interest	0	0	0	10	10	100	0	0	0
	Shareholders' Interest	50	75	100	25	25	25	0	0	0
	Total Assets to Total Liabilities	100	75	50	75	50	50	0	0	0
	Total Shareholders ‘interest to Total Assets	100	75	75	0	0	0	50	50	50
	Critical growth rate	100	100	100	0	75	75	75	75	75
	Funds required to finance growth	100	75	75	100	50	75	75	75	75

Table 7-15 Indicator values per company obtained by applying traditional models (continued)

		C1			C2			C3		
Performance evaluation areas	**Element**	**Previous period 2014**	**Current period 2015**	**Future period 2016**	**Previous period 2014**	**Current period 2015**	**Future period 2016**	**Previous period 2014**	**Current period 2015**	**Future period 2016**
Capacity	Return on Assets	75	75	50	75	50	50	50	25	0
	Fixed charged cover	75	75	50	75	25	0	25	0	0
	Interest cover	25	25	0	100	25	0	0	0	0
	Ordinary dividend cover	75	75	100	75	25	0	25	0	25
	Preference dividend cover	50	50	50	50	50	50	100	0	50
	Safety Margin Ratio	50	50	25	50	25	0	25	0	0
	Growth in dividends	75	25	25	50	50	50	75	75	0
	Growth in sales	100	50	25	50	0	50	75	0	50
Financial	Earnings per Share	0	0	0	0	0	0	100	0	0
	Price earnings ratio	25	25	25	25	25	0	25	25	100
	Return on Equity	25	25	25	100	50	25	25	25	25
	Cash Flow Return on Investment	75	100	75	75	25	0	50	0	0
	Cash Value Added	0	0	0	100	25	0	75	25	0
	Economic Value Added	75	75	75	100	50	25	50	25	25
	Market Value Added	25	25	25	25	25	25	0	100	0
	Growth in earnings	75	75	100	75	50	50	50	0	50
	Growth in net asset value	25	25	0	25	25	0	0	100	25

Source: Own research

Table 7-16: Indicator values per company obtained by applying the integrated financial decision-making model using lean accounting principles

		C1			C2			C3		
		2014	2015	2016	2014	2015	2016	2014	2015	2016
Performance evaluation areas	Element	Previous period	Current period	Future period	Previous period	Current period	Future period	Previous period	Current period	Future period
Operating	Creditors payment period	50	50	0	100	100	75	100	100	75
	Current ratio	75	100	100	0	0	0	25	0	0
	Debtors collection period	25	25	0	100	100	50	100	100	75
	Inventory turnover	100	100	100	0	75	50	50	75	75
	Net investment in working capital	0	25	25	100	75	75	100	100	100
	Quick ratio	75	100	100	25	25	0	25	25	0
	Debt/Equity ratio	100	100	50	100	100	75	50	25	0
	Equity to Total Shareholders' Interest	0	0	0	10	10	100	0	0	0
	Shareholders' Interest	50	75	100	25	25	25	0	0	0
	Total Assets to Total Liabilities	100	75	50	75	50	50	0	0	0
	Total Shareholders ‘interest to Total Assets	100	75	75	0	0	0	50	50	50
	Critical growth rate	100	75	75	75	75	75	75	75	75
	Creditors payment period	75	75	75	75	50	75	75	0	75

Table 7-16: Indicator values per company obtained by applying the integrated financial decision-making model using lean accounting principles (continued)

		C1			C2			C3		
		2014	2015	2016	2014	2015	2016	2014	2015	2016
Performance evaluation areas	Element	Previous period	Current period	Future period	Previous period	Current period	Future period	Previous period	Current period	Future period
Capacity	Return on Assets	100	75	50	50	50	50	25	25	0
	Fixed charged cover	100	50	25	25	25	25	0	0	25
	Interest cover	25	25	0	0	0	0	0	0	0
	Ordinary dividend cover	75	75	50	0	25	25	25	0	25
	Preference dividend cover	50	50	50	50	50	50	100	0	50
	Safety Margin Ratio	25	25	0	75	25	25	100	75	75
	Growth in dividends	100	25	25	50	50	50	75	75	0
	Growth in sales	100	50	25	50	0	50	75	0	50
Financial	Earnings per Share	0	0	0	0	0	0	75	0	0
	Price earnings ratio	25	25	25	25	25	75	25	0	25
	Return on Equity	25	25	25	0	50	25	25	25	25
	Cash Flow Return on Investment	75	100	75	75	25	0	50	0	0
	Cash Value Added	0	0	0	100	25	0	75	25	0
	Economic Value Added	75	75	75	0	50	25	50	25	25
	Market Value Added	25	25	25	25	25	25	0	100	0
	Growth in earnings	75	75	100	75	50	50	50	0	50
	Growth in net asset value	25	25	0	25	25	0	0	100	25

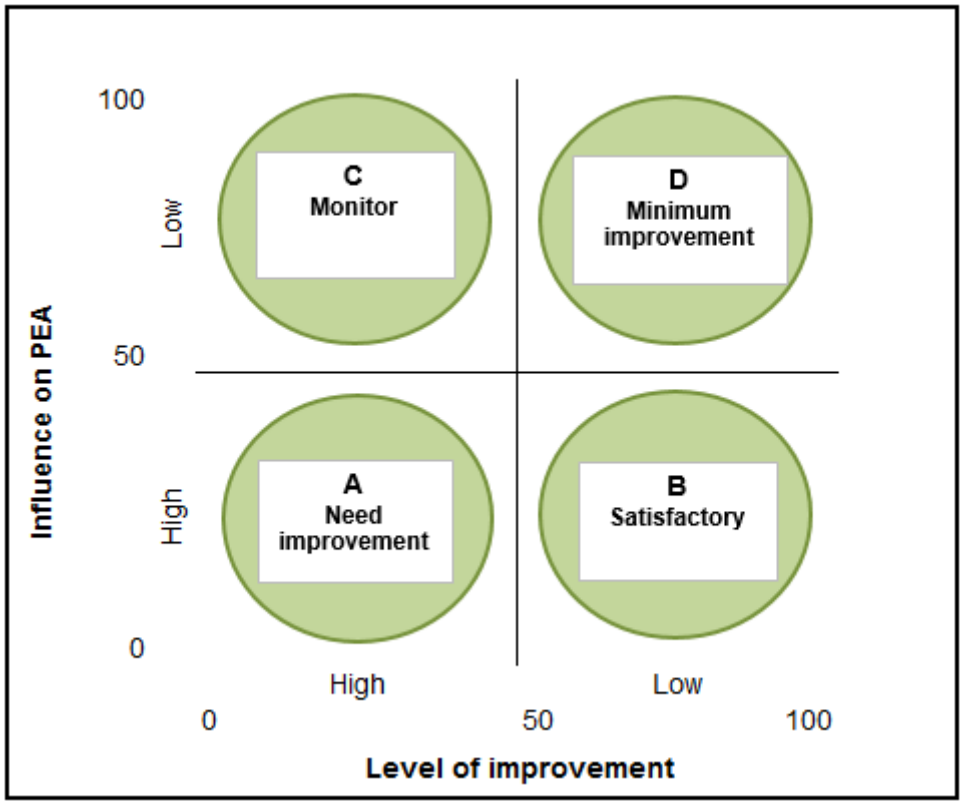
Source: Own research

By looking at the indicator values per company it is evident that when lean accounting principles are applied to the results of the measured companies over a three year period the scores ought to be different.

7.4 Usefulness of indicator values in the newly developed integrated financial decision-making model using lean accounting principles

Section 3.2 (page 43) deduced that the Mendelow matrix can be used to analyse stakeholders' impact on decisions. By adjusting the Mendelow matrix contrariwise the stakeholder will be able to determine whether the resulted score is acceptable or not. Figure 7-2 graphically expounded this decision of the stakeholder.

Figure 7-2: Contrariwise Mendelow matrix



Source: Researchers own interpretation

Figure 7-2 compared the influence on the PEA indicators with the level of improvement. The level of improvement can be described by how a prospective change will influence a PEA element. The figure consists of four quadrants as suggested by the Mendelow matrix. The Contrariwise Mendelow matrix, however,

in0dicates in ***Box A – Need improvement:*** The low scores obtained and recorded by the PEA indicators in Table 7-13 make indicators in this quadrant highly problematic and in need of improvement as it negatively impact the PEA. ***Box B – Satisfactory:*** PEA indicators are at satisfactory levels with a positive influence on the PEA, improvement levels are low. Only minimal improvements are necessary with these indicators. ***Box C – Monitor:*** These PEA indicators need to be monitored to circumvent them losing control and moving to Box A. This could involve putting additional control measures in place well in advance. ***Box D – Minimum improvement:*** These PEA indicators need minimum intervention, stakeholders are happy with the scores of these indicators. The indicator scores involved the determination of range values. The question, however, arise now is the results of the newly developed integrated financial decision-making model using lean accounting principles different to the traditional financial decision-making models.

7.5 Results of the newly developed integrated financial decision-making model using lean accounting principles

The results are the assignment of scores to the indicator values that were obtained from Tables 7-13 and 7-14 that were allocated to each element based on the results determined by the traditional as well as newly developed models and the allocated value of the elements obtained from Table 7-11. The three identified PEA's each has a different number of quantitative elements as was discussed in Section 7.3 (page 226). Therefore by calculating the scores it is necessary to weigh the indicator values for each of the elements within the particular PEA. In doing this, a weighted score is attached to each of the elements. The last row of each group PEA is then totalled per column, this represents the different years of each of the measured companies. Each PEA would also weigh in total 0.33333, making the total factor of the three PEA's 1.00000. Table 7-17 summarises the scores per company based on the traditional financial decision-making models while Table 7-18 summarises the scores per company based on the developed integrated financial decision-making model using lean accounting principles.

Table 7-17 and Table 7-18 indicate the three PEA's namely OI, CI, and FI with each of the identified quantitative elements. OI the operating indicators consists of 13 elements, which include; creditors payment period, current ratio, debtors collection

period, inventory turnover, net investment in working capital, quick ratio, debt/equity ratio, equity to total shareholders' interest, shareholders' interest, total assets to total liabilities, total shareholders' interest to total assets (TSITA), critical growth rate (CGR), and funds required to finance growth (FRTFG). The CI will consider eight capacity indicators namely; return on assets, fixed charged cover, interest cover, ordinary dividend cover, preference dividend cover, safety margin ratio, GID, and GIS. Finally the third PEA, the FI have nine financial indicators that were identified by a selective coding process. The nine FI's are: earnings per share, price earnings ratio, return on equity, cash flow return on investment, cash value added, economic value added, market value added, growth in earnings, and growth in net asset value.

Table 7-17: Scores per company based on the traditional financial decision-making models

		C1			C2			C3			Mean		
		2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016
Performance evaluation areas	**Code**	**Previous period**	**Current period**	**Future period**	**Previous period**	**Current period**	**Future period**	**Previous period**	**Current period**	**Future period**	**Previous period**	**Current period**	**Future period**
Operating	Creditors payment period	3.85	3.85	0.00	7.69	7.69	5.77	7.69	7.69	5.77	6.41	6.41	3.85
	Current ratio	5.77	7.69	7.69	0.00	0.00	0.00	1.92	0.00	0.00	2.56	2.56	2.56
	Debtors collection period	1.92	1.92	0.00	7.69	7.69	3.85	7.69	7.69	5.77	5.77	5.77	3.21
	Inventory turnover	7.69	7.69	7.69	0.00	5.77	3.85	3.85	5.77	5.77	3.85	6.41	5.77
	Net investment in working capital	0.00	1.92	1.92	7.69	5.77	5.77	7.69	7.69	7.69	5.13	5.13	5.13
	Quick ratio	5.77	7.69	7.69	1.92	1.92	0.00	1.92	1.92	0.00	3.21	3.85	2.56
	Debt/Equity ratio	7.69	7.69	3.85	7.69	7.69	5.77	3.85	1.92	0.00	6.41	5.77	3.21
	Equity to Total Shareholders' Interest	0.00	0.00	0.00	0.77	0.77	7.69	0.00	0.00	0.00	0.26	0.26	2.56
	Shareholders' Interest	3.85	5.77	7.69	1.92	1.92	1.92	0.00	0.00	0.00	1.92	2.56	3.21
	Total Assets to Total Liabilities	7.69	5.77	3.85	5.77	3.85	3.85	0.00	0.00	0.00	4.49	3.21	2.56
	Total Shareholders ‘interest to Total Assets	7.69	5.77	5.77	0.00	0.00	0.00	3.85	3.85	3.85	3.85	3.21	3.21
	Critical growth rate	7.69	7.69	7.69	0.00	5.77	5.77	5.77	5.77	5.77	4.49	6.41	6.41
	Funds required to finance growth	7.69	5.77	5.77	7.69	3.85	5.77	5.77	5.77	5.77	7.05	5.13	5.77
	Score	**22.44**	**23.08**	**19.87**	**16.28**	**17.56**	**16.67**	**16.67**	**16.03**	**13.46**	**18.46**	**18.89**	**16.67**

Table 7-17: Scores per company based on the traditional financial decision-making models (continued)

		C1			C2			C3			Mean		
		2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016
Performance evaluation areas	**Code**	**Previous period**	**Current period**	**Future period**	**Previous period**	**Current period**	**Future period**	**Previous period**	**Current period**	**Future period**	**Previous period**	**Current period**	**Future period**
Capacity	Return on Assets	9.38	9.38	6.25	9.38	6.25	6.25	6.25	3.13	0.00	8.33	6.25	4.17
	Fixed charged cover	9.38	9.38	6.25	9.38	3.13	0.00	3.13	0.00	0.00	7.29	4.17	2.08
	Interest cover	3.13	3.13	0.00	12.50	3.13	0.00	0.00	0.00	0.00	5.21	2.08	0.00
	Ordinary dividend cover	9.38	9.38	12.50	9.38	3.13	0.00	3.13	0.00	3.13	7.29	4.17	5.21
	Preference dividend cover	6.25	6.25	6.25	6.25	6.25	6.25	12.50	0.00	6.25	8.33	4.17	6.25
	Safety Margin Ratio	6.25	6.25	3.13	6.25	3.13	0.00	3.13	0.00	0.00	5.21	3.13	1.04
	Growth in dividends	9.38	3.13	3.13	6.25	6.25	6.25	9.38	9.38	0.00	8.33	6.25	3.13
	Growth in sales	12.50	6.25	3.13	6.25	0.00	6.25	9.38	0.00	6.25	9.38	2.08	5.21
	Score	**21.88**	**17.71**	**13.54**	**21.88**	**10.42**	**8.33**	**15.63**	**4.17**	**5.21**	**19.79**	**10.76**	**9.03**

Table 7-17: Scores per company based on the traditional financial decision-making models (continued)

		C1			C2			C3			Mean		
		2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016
Performance evaluation areas	**Code**	**Previous period**	**Current period**	**Future period**	**Previous period**	**Current period**	**Future period**	**Previous period**	**Current period**	**Future period**	**Previous period**	**Current period**	**Future period**
Financial	Earnings per Share	0.00	0.00	0.00	0.00	0.00	0.00	11.11	0.00	0.00	3.70	0.00	0.00
	Price earnings ratio	2.78	2.78	2.78	2.78	2.78	0.00	2.78	2.78	11.11	2.78	2.78	4.63
	Return on Equity	2.78	2.78	2.78	11.11	5.56	2.78	2.78	2.78	2.78	5.56	3.70	2.78
	Cash Flow Return on Investment	8.33	11.11	8.33	8.33	2.78	0.00	5.56	0.00	0.00	7.41	4.63	2.78
	Cash Value Added	0.00	0.00	0.00	11.11	2.78	0.00	8.33	2.78	0.00	6.48	1.85	0.00
	Economic Value Added	8.33	8.33	8.33	11.11	5.56	2.78	5.56	2.78	2.78	8.33	5.56	4.63
	Market Value Added	2.78	2.78	2.78	2.78	2.78	2.78	0.00	11.11	0.00	1.85	5.56	1.85
	Growth in earnings	8.33	8.33	11.11	8.33	5.56	5.56	5.56	0.00	5.56	7.41	4.63	7.41
	Growth in net asset value	2.78	2.78	0.00	2.78	2.78	0.00	0.00	11.11	2.78	1.85	5.56	0.93
	Score	**12.04**	**12.96**	**12.04**	**19.44**	**10.19**	**4.63**	**13.89**	**11.11**	**8.33**	**15.12**	**11.42**	**8.33**
Total Score		**56.35**	**53.75**	**45.45**	**57.60**	**38.17**	**29.63**	**46.18**	**31.30**	**27.00**	**53.38**	**41.07**	**34.03**

Source: Own research

Table 7-18: Scores per company based on the developed integrated financial decision-making model using lean accounting principles

		C1			C2			C3			Mean		
		2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016
Performance evaluation areas	Code	Previous period	Current period	Future period	Previous period	Current period	Future period	Previous period	Current period	Future period	Previous period	Current period	Future period
Operating	Creditors payment period	3.85	3.85	0.00	7.69	7.69	5.77	7.69	7.69	5.77	6.41	6.41	3.85
	Current ratio	5.77	7.69	7.69	0.00	0.00	0.00	1.92	0.00	0.00	2.56	2.56	2.56
	Debtors collection period	1.92	1.92	0.00	7.69	7.69	3.85	7.69	7.69	5.77	5.77	5.77	3.21
	Inventory turnover	7.69	7.69	7.69	0.00	5.77	3.85	3.85	5.77	5.77	3.85	6.41	5.77
	Net investment in working capital	0.00	1.92	1.92	7.69	5.77	5.77	7.69	7.69	7.69	5.13	5.13	5.13
	Quick ratio	5.77	7.69	7.69	1.92	1.92	0.00	1.92	1.92	0.00	3.21	3.85	2.56
	Debt/Equity ratio	7.69	7.69	3.85	7.69	7.69	5.77	3.85	1.92	0.00	6.41	5.77	3.21
	Equity to Total Shareholders' Interest	0.00	0.00	0.00	0.77	0.77	7.69	0.00	0.00	0.00	0.26	0.26	2.56
	Shareholders' Interest	3.85	5.77	7.69	1.92	1.92	1.92	0.00	0.00	0.00	1.92	2.56	3.21
	Total Assets to Total Liabilities	7.69	5.77	3.85	5.77	3.85	3.85	0.00	0.00	0.00	4.49	3.21	2.56
	Total Shareholders ‘interest to Total Assets	7.69	5.77	5.77	0.00	0.00	0.00	3.85	3.85	3.85	3.85	3.21	3.21
	Critical growth rate	7.69	5.77	5.77	5.77	5.77	5.77	5.77	5.77	5.77	6.41	5.77	5.77
	Funds required to finance growth	5.77	5.77	5.77	5.77	3.85	5.77	5.77	0.00	5.77	5.77	3.21	5.77
	Score	**21.79**	**22.44**	**19.23**	**17.56**	**17.56**	**16.67**	**16.67**	**14.10**	**13.46**	**18.68**	**18.03**	**16.45**

Table 7-18: Scores per company based on the developed integrated financial decision-making model using lean accounting principles (continue)

		C1			C2			C3			Mean		
		2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016
Performance evaluation areas	**Code**	**Previous period**	**Current period**	**Future period**	**Previous period**	**Current period**	**Future period**	**Previous period**	**Current period**	**Future period**	**Previous period**	**Current period**	**Future period**
Capacity	Return on Assets	9.38	9.38	6.25	9.38	6.25	6.25	6.25	3.13	0.00	8.33	6.25	4.17
	Fixed charged cover	9.38	9.38	6.25	9.38	3.13	0.00	3.13	0.00	0.00	7.29	4.17	2.08
	Interest cover	3.13	3.13	0.00	12.50	3.13	0.00	0.00	0.00	0.00	5.21	2.08	0.00
	Ordinary dividend cover	9.38	9.38	12.50	9.38	3.13	0.00	3.13	0.00	3.13	7.29	4.17	5.21
	Preference dividend cover	6.25	6.25	6.25	6.25	6.25	6.25	12.50	0.00	6.25	8.33	4.17	6.25
	Safety Margin Ratio	6.25	6.25	3.13	6.25	3.13	0.00	3.13	0.00	0.00	5.21	3.13	1.04
	Growth in dividends	9.38	3.13	3.13	6.25	6.25	6.25	9.38	9.38	0.00	8.33	6.25	3.13
	Growth in sales	12.50	6.25	3.13	6.25	0.00	6.25	9.38	0.00	6.25	9.38	2.08	5.21
	Score	**21.88**	**17.71**	**13.54**	**21.88**	**10.42**	**8.33**	**15.63**	**4.17**	**5.21**	**19.79**	**10.76**	**9.03**

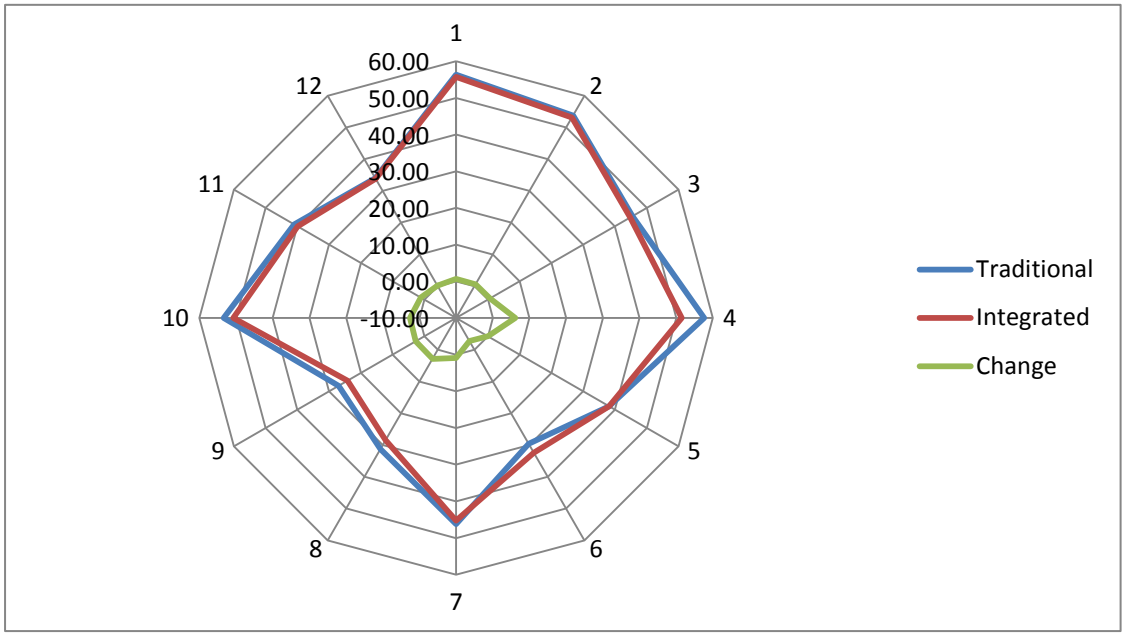
Table 7-18: Scores per company based on the developed integrated financial decision-making model using lean accounting principles (continue)

		C1			C2			C3			Mean		
		2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016
Performance evaluation areas	**Code**	**Previous period**	**Current period**	**Future period**	**Previous period**	**Current period**	**Future period**	**Previous period**	**Current period**	**Future period**	**Previous period**	**Current period**	**Future period**
Financial	Earnings per Share	0.00	0.00	0.00	0.00	0.00	0.00	8.33	0.00	0.00	2.78	0.00	0.00
	Price earnings ratio	2.78	2.78	2.78	2.78	2.78	8.33	2.78	0.00	2.78	2.78	1.85	4.63
	Return on Equity	2.78	2.78	2.78	0.00	5.56	2.78	2.78	2.78	2.78	1.85	3.70	2.78
	Cash Flow Return on Investment	8.33	11.11	8.33	8.33	2.78	0.00	5.56	0.00	0.00	7.41	4.63	2.78
	Cash Value Added	0.00	0.00	0.00	11.11	2.78	0.00	8.33	2.78	0.00	6.48	1.85	0.00
	Economic Value Added	8.33	8.33	8.33	0.00	5.56	2.78	5.56	2.78	2.78	4.63	5.56	4.63
	Market Value Added	2.78	2.78	2.78	2.78	2.78	2.78	0.00	11.11	0.00	1.85	5.56	1.85
	Growth in earnings	8.33	8.33	11.11	8.33	5.56	5.56	5.56	0.00	5.56	7.41	4.63	7.41
	Growth in net asset value	2.78	2.78	0.00	2.78	2.78	0.00	0.00	11.11	2.78	1.85	5.56	0.93
	Score	**12.04**	**12.96**	**12.04**	**12.04**	**10.19**	**7.41**	**12.96**	**10.19**	**5.56**	**12.35**	**11.11**	**8.33**
Total Score		**55.71**	**53.11**	**44.81**	**51.48**	**38.17**	**32.41**	**45.25**	**28.45**	**24.23**	**50.81**	**39.91**	**33.81**

Source: Own research

Table 7-17 and Table 7-18 clearly reveal differences in the scores of the three companies over the three reported financial periods. Measuring the mean scores over the three companies indicate a 5% differences between the scores obtained using the traditional models and the integrated model, for the previous financial period. The difference in the mean during the current financial period is 3% while the difference in the future period amounts to 1%. The radar chart in Figure 7-3 visually indicates these changes.

Figure 7-3: Score comparison between traditional and integrated model



Source: Own research

The numbers 1 to 9 in Figure 7-3 indicate the scores of the selected companies. The number 1 is the score of C1 for 2014, while 6 indicate the score of C2 in 2016. Numbers 10 to 12 are the mean scores per period, number 10, represent the mean score for 2014. By observing Figure 7-3 the change in the scores obtained for each of the three companies over the three financial periods become apparent. The traditional financial decision-making model accumulated higher scores than is the case with the integrated financial decision-making model using lean accounting principles. The reason for this is that the mean values of the two models are significantly different than indicated in Table 7-19.

Table 7-19: Comparing the mean values of the traditional and newly developed integrated financial decision-making models

Performance evaluation areas	Element	Traditional financial decision-making model		Integrated financial decision-making model using lean accounting principles	
		Mean	Std deviation	Mean	Std deviation
Operating	Creditors payment period	94.31	37.53	94.31	37.53
	Current ratio	1.68	0.68	1.68	0.68
	Debtors collection period	43.05	10.18	43.05	10.18
	Inventory turnover	8.82	5.10	8.82	5.10
	Net investment in working capital	21.15	17.80	21.15	17.80
	Quick ratio	1.31	0.50	1.31	0.50
	Debt/Equity ratio	0.35	0.17	0.35	0.17
	Equity to Total Shareholders' Interest	1.38	0.47	1.38	0.47
	Shareholders' Interest	-0.01	2.08	-0.01	2.08
	Total Assets to Total Liabilities	2.15	0.42	2.15	0.42
	Total Shareholders 'interest to Total Assets	-0.25	0.34	-0.25	0.34
	Critical growth rate	-1.40	3.24	-0.25	0.58
	Funds required to finance growth	-3464.41	5350.52	-3793.71	5187.36
Capacity	Return on Assets	0.06	0.07	0.00	0.11
	Fixed charged cover	1.26	0.32	1.12	0.30
	Interest cover	17.37	28.27	4.07	13.22
	Ordinary dividend cover	1.26	1.51	0.61	1.42
	Preference dividend cover	-103.87	1331.43	-103.87	1331.43
	Safety Margin Ratio	0.16	0.21	0.37	0.28
	Growth in dividends	-0.02	0.16	-0.02	0.16
	Growth in sales	-0.18	0.13	-0.18	0.13
Financial	Earnings per Share	25.51	65.54	23.85	66.15
	Price earnings ratio	70.13	357.46	71.02	227.10
	Return on Equity	1.44	3.56	-3.40	2.45
	Cash Flow Return on Investment	0.19	0.09	0.19	0.09
	Cash Value Added	13904.92	19104.60	13904.92	19107.60
	Economic Value Added	-6398.52	7508.68	-9743.75	8747.90
	Market Value Added	12806.81	187987.00	12806.81	187987.72
	Growth in earnings	-0.73	0.83	-0.73	0.83
	Growth in net asset value	0.01	0.12	0.01	0.12

Source: Own research

Table 7-19 indicated clearly how the mean values of the two models differ. These differences would lead to different scores. The difference in scores indicated that stakeholders may consider making a different decision; more conservative stakeholders could opt for using the lower results of the integrated financial decision-making model.

Homes, Trueblood and Heathcote (2016:1) argue that decision-making integrate inert information with dynamic information that changes systematically or rapidly while the decision is in progress. Sterman (2000:107) concludes that "*any structure consists of the feedback loops, stocks and flows, and nonlinearities created by the interaction of the physical and institutional structure of the system with the decision-making processes of the agents acting within it*." While Barnabè (2011:452) proposed that "*real systems are characterised by complex patterns of interacting variables and even by the presence of a variety of bi-directional cause and effect relationships among the variables*."

7.6 Stakeholders' decision-making

Homes *et al*. (2016:1) conclude that decisions are based on evidence for different alternatives that is accumulated over time, which will lead to a decision as soon as a threshold amount of accumulated evidence in favour of one of the choices is obtained. Quantitative factors are the numerical basis (Baramo *et al*., 2013:239) for decision-making considering the effect of the decision on stakeholders' responses while qualitative factors consider other issues that may influence the outcome of the decision. Quantitative factors provide a numerical basis for decision-making, reducing decisions to looking at a monetary value placed on different choices, this data only provide part of the story (Baramo *et al*., 2013:239). Other factors need to be taken into account, factors such as the influence of decisions on stakeholders and stakeholders' responses to such decisions.

Baramo *et al*. (2013:239) explain that "*management solutions inclined towards lean thinking try to solve contemporary worldwide market challenges by focusing on a virtuous corporate functioning, thanks to a shared philosophy that relies entirely on the minimization of any kind of waste*." Ringen *et al*. (2014:242) argue that

globalisation and competition greatly influence decision-making models of stakeholders.

The usefulness of the decision should be determined by the stakeholder. The individual scores will be determined by the preferences, experience and requirements of the different stakeholders. The final decision of the stakeholder may be the result of the final score, and whether it is acceptable to the stakeholders, requirement. The newly developed integrated model assigned weighs to each of the predetermined elements. These weights results in a final score that the stakeholder may use in order to motivate the decision. The final score will range from 0 to 100. The stakeholder will need to take a view on what is an acceptable score, given the requirements of the stakeholder. The acceptable score may be the industry standard or it may even be the target score.

The use on industry standards is a generally accepted phenomena when engaging in financial decision-making. Stakeholders consider industry comparisons together with trend analysis to make financial decisions. However the decision to make use of the integrated financial decision-making model will depend on the stakeholders' financial decision-making motives and information requirements as Table 7-1 (page 191) outlines.

Different stakeholders have different financial decision-making motives and therefore the information requirements are not the same. Shareholders need to make financial decision to determine what to do with the investment in future, a more conservative approach to financial decision-making could make the investment decision less risky. Comparing the results of the integrated financial decision-making model using lean accounting principles indicates some of the financial ratios are lower than that of the same financial ratios calculated using traditional financial decision-making models (Table 7-7, page 216). The lower results indicate a more conservative approach which is less risky for shareholders thus the integrated financial decision-making model using lean accounting principles is a viable alternative. However with management that is being remunerated on financial performance, a more conservative approach in determining the company's performance measures could result in the payment of lower bonuses. Management would therefore rather make use of the traditional financial decision-making models, as this will result in higher

reported performance measures (Table 7-7, page 216) and potentially bigger bonus pay outs.

7.7 Comparing the Du Pont analysis

The objective of financial management is the maximisation of wealth; a structured analysis should aim towards measuring how effective this objective was achieved during a financial period.

The overall indicator of the Du-Pont analysis is return on equity (ROE), as profit maximisation is not the primary objective, shareholders would want to see an adequate return on shareholders' funds. This adequate return on shareholders' funds will contribute positively towards wealth maximisation.

The strength in the Du Pont model lies in its ability to arrange many financial ratios into three categories. The three categories are associated with: 1] income; 2] activity (investment) and 3] capital structure. The diagnostic capability of the model allows for focusing the devotion of the users on problem areas, rather than arbitrarily looking at unstructured and time consuming financial analysis.

By applying the Du Pont analysis the stakeholders can immediately notice important characteristics of the analysed company. The Du Pont analysis makes it clear to the stakeholders why the ROE compare better or worse than last year, or to competitors or even the industry due to the relationship between the return on assets (ROA) and the financial leverage multiplier (FLM).

The ROA measure the income in relation to total assets while the FLM determine how assets are financed by ordinary equity. The ROE is then calculated by multiplying the ROA and the FLM to indicate the relationship. Du Pont analysis indicates the adjustment in a company's ROE is the combined impact of net sales, net profit, non-current-, current assets, and ordinary equity. Table 7-20 summarise the Du Pont analysis using traditional accounting of the three companies over three financial periods. Table 7-21 indicates the results of the Du Pont analysis using lean accounting for the same financial periods.

Table 7-20: Du Pont analysis using traditional accounting

Traditional accounting Du Pont Analysis									
	C1			C2			C3		
	2014	2015	2016	2014	2015	2016	2014	2015	2016
NP% (Before tax)	22.3%	24.6%	13.7%	15.6%	3.7%	1.2%	1.4%	-4.3%	-1.3%
TATO	74.1%	60.9%	44.8%	75.4%	48.8%	42.4%	124.4%	85.1%	69.5%
ROA	16.5%	15.0%	6.1%	11.7%	1.8%	0.5%	1.7%	-3.7%	-0.9%
FLM	1.6	1.6	1.8	1.7	1.7	1.8	2.5	2.7	2.7
ROE	26.4%	24.7%	11.3%	20.0%	3.1%	0.9%	4.4%	-9.7%	-2.4%

Source: Own research

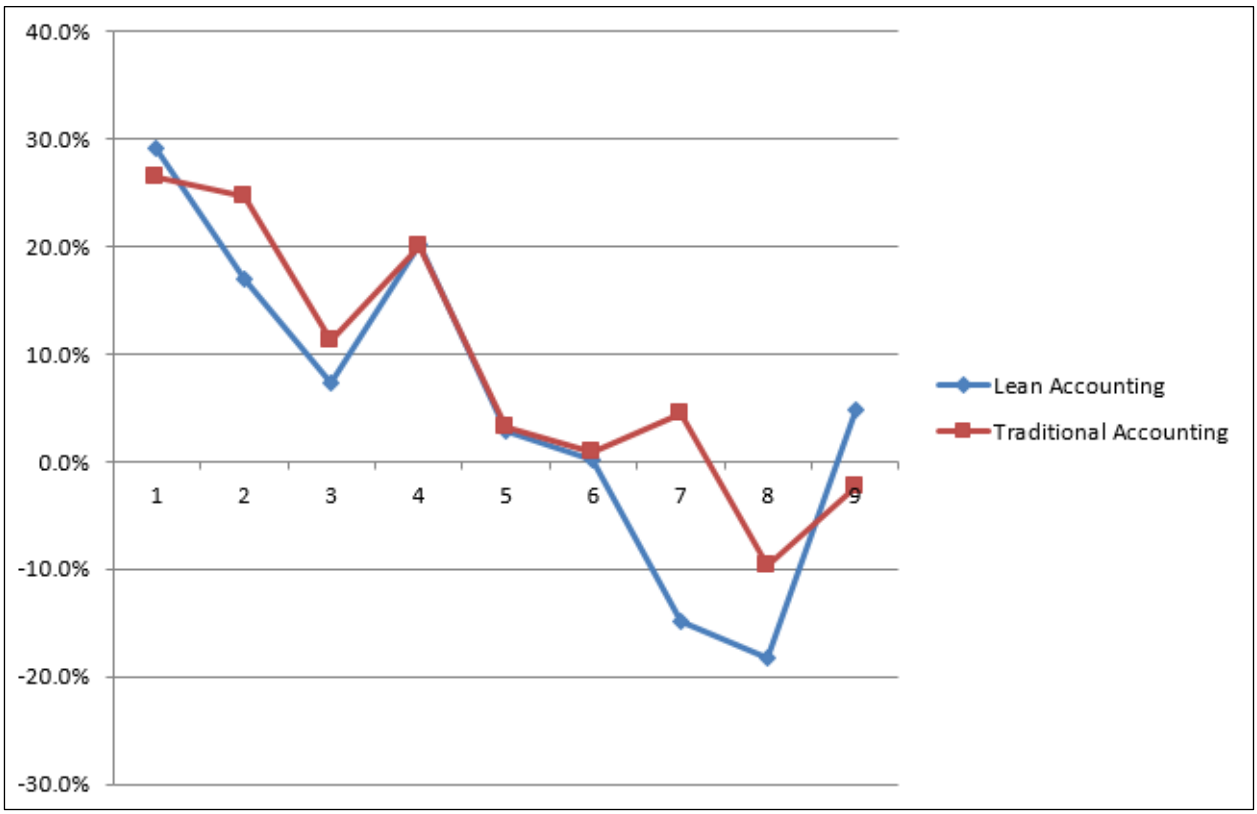
Table 7-21: Du Pont analysis using lean accounting

Lean accounting Du Pont Analysis									
	C1			C2			C3		
	2014	2015	2016	2014	2015	2016	2014	2015	2016
NP% (Before tax)	24.6%	17.0%	8.9%	15.7%	3.5%	0.3%	-4.7%	-8.1%	-27.1%
TATO	74.1%	60.9%	44.8%	75.4%	48.8%	42.4%	124.4%	85.1%	69.5%
ROA	18.2%	10.4%	4.0%	0.2%	11.8%	0.1%	-5.9%	-6.9%	-18.8%
FLM	1.6	1.6	1.8	1.7	1.7	1.8	2.5	2.7	2.7
ROE	29.2%	17.1%	7.4%	0.3%	20.1%	0.2%	-14.9%	-18.3%	4.9%

Source: Own research

By comparing the two tables above, the FLM remains unchanged. It can be deduced that lean accounting principles does not influence the capital structure of the company. The income and investment, however, are being influenced by the adoption of lean accounting principles. The combined influence on the relationship between income and investment influences the calculated ROE. Figure 7-4 illustrates this clearly.

Figure 7-4: Lean accounting's impact on ROE



Source: Own research

By applying the Du Pont analysis to the three analysed companies over the three financial periods the following important trend is clear. Du Pont's objective is to measure the ROE, and therefore the focus on comparing the results between traditional- and lean accounting ~~was~~ focused on reporting ~~the~~ ROE. The ROE is always lower for lean accounting, except for the C1 previous period where it was slightly higher. An important conclusion is that the stakeholders may consider a different decision than the decision that would have been made using traditional accounting principles. This finding is consistent with the finding in Section 7.6 (page 255). It can be deduced that the newly developed integrated financial decision-making model using lean accounting principles

will influence the decision-making of stakeholders. The calculated ROEs are significantly different between the traditional and integrated model as can be seen from Figure 7-4. These again are due to the more conservative manner in which the Du Pont analysis would be calculated using the integrated financial decision-making model that applies lean accounting principles.

7.8 Summary

This chapter disparagingly analyses the data and research results, describing and explaining the development of the integrated financial decision-making model, discussion methods and sampling methods The results and analysis presented in this chapter were based on the literature review and document analysis of the three companies in the energy producing industry using different accounting reporting standards.

Tables and figures were used to illustrate all the findings. The theoretical model that was developed is the result of the selective coding phase. Diverse stakeholders require different information to assists with their financial decision-making requirements. The literature review exposed some deficiencies of current financial decision-making models, the results of the open, axial and selective coding were analysed and applied to these models. Lean accounting principles relevant to this study were discussed and the data obtained through a document analysis was applied to value streams, box reports, and VSFPs and the results were reported.

The impact of lean accounting principles is positive on the newly developed integrated financial decision-making model and has shown that the scores of the PEAs changed from the scores of the traditional financial decision-making models. When the ROE was calculated using the Du Pont model findings were authenticated and it confirm that by using the newly developed integrated financial decision-making model using lean accounting principles the decision-making of stakeholders would indeed be influenced. Section 3.5 (page 66) deduce that it was decisions that led to the Global Financial Crisis (GFC), while in Section 1.1 (page 1) it was suggested that in times of financial hardship integration is the lifeline. The integration of financial decision-making models and lean accounting models have been used to design an integrated financial decision-making model, the strength of which is that more conservative decision could be made. These

more conservative decisions are being based on lower amounts being reported than with the traditional models. Furthermore, the newly developed model use value streams that can eliminate waste create a culture of continuous improvement and increase involvement. In conclusion this study gives an answer to Kennedy and Widener (2008:320) on what would be the influence of lean accounting on decision-making (Section 1.2, page 5). In the final chapter that provides a reflection on the study. This reflection draws some conclusions and makes some recommendations.

CHAPTER 8

EPILOGUE – CONCLUDING, RECOMMENDING AND REFLECTING

"I alone cannot change the world, but I can cast a stone across the waters to create many ripples." - Mother Teresa

8.1 Introduction

The preceding chapter analysed the data and reported the findings of the grounded theory. The results of the impact of the developed integrated financial decision-making model using lean accounting principles that was applied to a multiple case study that was conclusive in that stakeholders' decisions-making will be influenced.

The words of Mother Teresa *"I alone cannot change the world, but I can cast a stone across the waters to create many ripples"* embrace the essence of this research project and in recollection support its findings. The primary objective of the study as set out in Chapter 1 was to develop an integrated financial decision-making model using lean accounting principles that will lead to more conservative results that will influence the decision-making of all the companies' stakeholders irrespective of the accounting standards that apply. A sturdy consent between various authors includes that accounting information influence stakeholders' decision-making. Both the literature study and the empirical research findings confirm financial information's impact on the decision-making of stakeholders. In order to secure the trustworthiness of stakeholders the integrated financial decision-making model using lean accounting principles must rely on proven traditional financial decision-making models and it should meticulously conform to accounting standards.

The consequence of failure to adhere to accounting standards will result in a catastrophic setback for the envisaged financial decision-making model. The effectiveness and usefulness of the integrated financial decision-making model using lean accounting principles will depend on the model's ability to provide stakeholders with information that will influence their decision-making. If the developed integrated model is incapable to provide in the rudimentary information requirements of the

different stakeholders they would have no choice but to utilise the traditional financial decision-making models.

The literature has extensive research studies on financial accounting disclosure, integrated reporting, financial decision-making models and lean accounting, however, these essential elements are not being integrated in current research efforts. This gap in the literature has led to the development of an integrated financial decision-making model using lean accounting principles.

This study has been structured in three main fragments: In the first fragment appropriate literature on; the development and the application of accounting standards, the stakeholders' financial decision-making principles and models in perspective and influencing decision-making using lean accounting were studied.

The second fragment formed the empirical analysis of the study. It provided the research design and methodology of the study. Furthermore, it affords the framework for the development of an integrated financial decision-making model using lean accounting principles.

While the third and final fragment of the study revised the data analysis and research results while explaining the development of the integrated financial decision-making model. Furthermore, it discusses responses and explanations obtained from the research that ultimately leads to the evaluation of the paraphernalia of the developed model.

The purpose of this chapter is to encapsulate the most germane themes discussed in the earlier chapters along with emphasising certain conclusions and recommendations. This may result in some replication, but this is essential to assist as a précis and summary to readers. The chapter will firstly consider the literature study before the empirical research findings would be abridged, which will culminate in a conclusion on the newly developed integrated financial decision-making model using lean accounting principles. The remainder of the chapter will present the most important annotations and findings followed by some recommendations based on the results of the empirical study. This would be followed by providing a conclusion on the primary- and supported by the secondary research objectives of the study. The contribution of this study to financial decision-making models is also accentuated, after which the limitations of the study are

noted. The chapter will conclude with the some useful suggestions for further research followed by a final summary.

8.1.1 Literature study

The literature review was directed by means of secondary research in order to highlight the prominent traits of the study topic and to guide the empirical analysis on which the findings are based. Chapter 1 addressed the following aspects: the problem statement, the objectives of the study, the research methodology, the contribution of the study and the layout of the study.

Chapter 2 explored the development and application of accounting standards, focusing on harmonisation, quality and external influences. The review illuminated the benefits of implementing IAS, also emphasising the challenges presented by cultural and political influences on the implementation of these IAS. Interventions by elected politicians cannot be under estimated, the South African political landscape currently provide a good example of this. The implementation of accounting standards provides the framework for accounting reports. Accounting reports have the ability to provide stakeholders with information on which financial decision can be made.

In Chapter 3 the focus was on the financial decision-making principles and the financial models available to stakeholders. Stakeholders have different information requirements, originating from the decision-making motives of the stakeholder. Chapter 3 also provided an explanation on some of the most commonly used Traditional accounting-based financial performance measures (AFP) and modern value-based financial performance measures (VFP) that aid stakeholders' decision-making. Furthermore, an explanation was given on risk, growth and non-financial indicators that influences the decisions that stakeholders make.

Chapter 4 has drawn from lean accounting principles in order to influence the decision-making of different stakeholders. Highlighting the shortcomings of traditional accounting and how lean accounting can address it. The chapter concluded with a description of lean accounting's influence of decision-making with specific reference to; value stream performance measures, value stream box reports and value stream performance reports.

8.1.2 Empirical research

Chapter 5 dealt with the empirical study, focusing on the research methodology employed to achieve the aim of the study and justifying its appropriateness. In order to achieve the objectives of this study a qualitative approach using a hybrid of grounded theory and multiple case study was used. Secondary data were collected by using document analyses as it seemed to be the most appropriate and convenient to acquire the input from the various companies. The collection of data followed the subsequent process.

As grounded theory involved the generation of new substantive theory based on existing theories. Hence during the literature review the collected data were coded using three coding phases namely; open, axial, and selective coding. The open coding revealed seven emerging categories that were depicted in Table 5-4 (page 107), namely: traditional accounting-based-; modern value financial performance measures; three financial risk indicators (capital sensitivity: solvability and -liquidity, and income sensitivity); growth- and finaly non-financial indicators. After determining the emerging categories the relationship between the categories were established. The establishment of these relationships between categories is referred to as axial coding and this revealed four financial decision-making indicators, which were summarised in Table 5-6 (page 107) namely; operational indicators (OI), capacity indicators (CI), financial indicators (FI), and non-financial indicators (NF). The selective coding was done by simultaneously applying the results to the multiple case study. This led to the validation of these relationships in the selective coding phase. This resulted in the development of the conceptual financial decision-making model using lean accounting principles.

The selection of the companies used in the multiple case study was based on purposeful and convenient sampling. The population was all listed companies on the JSE, LSE and NYSE. In order to determine the usefulness of the developed model it was necessary to conclude if it can be applied to different accounting standards. The three companies that were finally chosen were due to similarity of the industry while reporting in terms of different accounting standards. Document analyses were used to collect the required data from the annual financial- and integrated reports of these three companies over three financial years for 2014 to 2016. These results were tabulated, analysed and interpreted.

Chapter 7 critically review the data analysis and the results dealt with the construction of the development of the integrated financial decision-making model using lean accounting principles. Based on the literature study and research findings using a hybrid between grounded theory and multiple case studies the model was develop and tested in order to determine whether or not it influence stakeholders' decision-making ability.

8.1.3 The development of an integrated financial decision-making model using lean accounting principles

Chapter 6 dealt with the development of an integrated financial decision using lean accounting principles. Based on the literature review and research findings using selective coding as was explained in Section 5.5.4.3 (page 129) the model was developed. The chapter explained how the findings were used to develop the integrated financial decision using lean accounting principles.

8.2 Reflection on the research objectives, results and conclusions

Chapter 1 (Section 1.3, page 6) and Chapter 8 (Section 8.1, page 261) explained the purpose of the study, which is to develop an integrated financial decision-making model based on lean accounting principles that will influence the decision-making of all stakeholders. In order to achieve the primary objective the study aimed to address eight secondary objectives. These objectives are outlined in Chapter 1 (Section 1.4, page 6). Reflecting on these objectives together with a discussion of the most notable findings and conclusions of each follows next.

8.2.1 Analysing the development and application of accounting standards in order to make accounting reporting more useful and widely acceptable to users in different financial markets and nationalities

By addressing the first secondary objective (Section 1.4, page 6) consideration was given to the development and harmonisation of accounting standards. In dealing with this objective the history of the role of the various accounting bodies in the development of accounting standards was discussed (Section 2.2, page 17). The increase in international trade placed pressure on accounting standards to conform and be harmonised. Section 2.3 (page 20) deduced the importance of consistency in the application of accounting standards. Furthermore, Section 2.3 (page 20) assessed

those inconsistencies in the application of accounting standards lead to inefficient unreliable and useless accounting information.

Section 2.3.1 (page 23) reported on the evidence that states that the adoption on IAS influence worldwide financial reporting. While Section 2.3.2 (page 24) deduced that in order to obtain the maximum benefit of implementing IAS, these standards need to converge. This convergence of accounting standards will lead to improvements in the reliability, compatibility and usefulness of accounting information of companies across markets and countries. This convergence will ultimately lead to the improvement of the quality of financial reports.

8.2.2 Reviewing how accounting measurements, estimations, and outcomes of accounting (financial reports) relates to quality

An investigation into accounting measures, estimates and financial reports yielded valuable insights on the importance of quality accounting standards (Section 2.4, page 27), therefore addressing the second secondary objective (Section 1.4, page 6). During the investigation an understanding of quality was gained, highlighting some important characteristics about quality. The philosophy that quality is formed from within a person or organisation therefore internally is emphasised.. However, Section 2.4 (page 27) suggested also various external factors; legal-, political systems and cultural that influences quality.

8.2.3 Establishing the relationship between accounting standards, cultural-, value models, and politics

The third secondary research objective of this study (Section 1.4, page 6) was addressed by exploring the external influences on the development of accounting standards. Several external factors affecting the development of accounting standards were identified. These include; cultural and political influences. A summary of the most significant results and conclusions on each of these as outlined in Section 2.5 (page 33) is provided next Section 8.2.3.1 (page 266) to Section 8.2.3.2 (page 267).

8.2.3.1 Cultural influences

It was established that cultural influences are important and play an important role in any society. Three important models were found in the literature.

- *Hofstede's cultural dimensional model* – the original model list four dimensions that influence culture, and in 1988 a fifth dimension was added (Section 2.5.1.1, page 33).
- *Gray's (1988) accounting values model* – Gray (1988) matched the four original dimensions of Hofstede with accounting values. This led to the classification of four key accounting values (Section 2.5.1.2, page 35).
- *Schwartz's cultural dimensions of values model* – the Schwartz's model divides national cultures into seven value types. The value types influence the way that the different value types influence accounting standards (Section 2.5.1.3, page 35).

Based on these findings the conclusion was drawn that cultural factors influence accounting standards.

8.2.3.2 Political influences

Various studies were found that demonstrated how political interferences influence accounting standards (Section 2.5.2, page 37). It can be concluded that central government influence the economical and accounting activities of a country. The purpose of decision-making and information requirements of different stakeholders was considered next and is referred to in the following section.

8.2.4 Determining the purpose of decision-making and information requirements of different stakeholders

Chapter 3 (page 42) addressed the fourth and fifth research objective as posited in Chapter 1 (Section 1.4, page 6). As previously mentioned; stakeholders use financial reports for decision-making purposes. Decision-making is important and it needs careful consideration of all relevant information. Section 3.2 (page 43) indicated three main groups of stakeholders that include; owners, internal and external stakeholders. Furthermore, Section 3.2 (page 43) outlines how decision-making will influence stakeholders and the environment in terms of the level of interest and power. This relationship between the level of interest and exercising power was illustrated in Figure 3-2 (page 47). An important finding was the fact that the value of information in terms of decision-making will be influenced by stakeholders' motives and requirements.

In conclusion seven stakeholders were identified and each have different decision-making needs and required different information. The seven different stakeholders were tubulated in Table 3-1 (page 45) and are:

- Investors (shareholders/owners);
- Financiers
- Managers
- Employees
- Customers
- Government
- General public

These stakeholders rely on accounting reports to supply timeous, accurate and useful information in order to make decisions (Section 3.3, page 50).

8.2.5 Investigation of different financial decision-making models used by the different stakeholders

It was mentioned in Section 8.2.4 (page 267) that Chapter 3 (page 42) addressed the fifth secondary research objective that was identified in Chapter 1 (Section 1.4, page 6). Section 3.4 (page 52) specifically dealt with the current financial decision-making models that stakeholders use. By addressing this secondary research objective it was found that the stakeholders use AFP measures (Section 3.4.2.1, page 53); VFP measures (Section 3.4.2.2, page 57); financial risk indicators (Section 3.4.3, page 61); and growth indicators (Section 3.4.4, page 64) for making decisions.

In conclusion it was deduced that stakeholders have different information requirements because of their decision-making necessities and because they will use different financial decision-making models. These financial decision-making models can be influenced by considering non-financial indicators and adopting a lean philosophy. The next section emphasises the findings on how adopting lean accounting principles will influence financial decision-making models.

8.2.6 Establishing the influence that the adoption of lean accounting principles has on financial decision-making models

The final theoretical objective as indicated in Chapter 1 (Section 1.4, page 6) is addressed in Chapter 4 (page 71). As identified in Chapter 3 (page 42), decision-making can be influenced by implementing lean accounting.

By addressing the sixth secondary research objective (Section 1.4, page 6), Section 4.2 (page 72) highlighted the five most commonly reported principles of lean accounting and argued that traditional accounting methods are not suitable in a lean environment. This raised the question of the necessity of yet another new accounting system (Section 4.3, page 74). The shortcomings of traditional accounting were investigated as well as how implementing lean accounting will overcome these shortcomings.

Section 4.4 (page 77) explained the principles, practices and tools of lean accounting in order to establish the influence of lean accounting on decision-making (Section 4.5, page 83). To establish the influence that the adoption of lean accounting principles has on financial decision-making models, reports need to be simplified and focus the stakeholders' attention on areas that require improvement. It must furthermore provide stakeholders with accurate, relevant and timeous information that adhere to accounting standards. Three concepts were found that will satisfy the aforementioned requirements namely;

- Value stream performance measurements
- Value stream box reports
- Value stream performance reports (VSPR)

It was established that if these concepts are applied to financial reports the financial decision-making models would be influenced. The next section emphasises the way in which the findings and conclusions of Chapter 2 to 4 were summarised and are used in the development of an integrated financial decision-making model using lean accounting principles.

8.2.7 Establishing the framework for the development of an integrated financial decision-making model using lean accounting principles

Chapter 6 (page 134) provided subsistence to the motivation for the development of an integrated financial decision-making model using lean accounting principles and

established the framework for it. By addressing this seventh secondary research objective (Section 1.4, page 6) attention was given to previous studies on integrated financial decision-making models (Section 6.2, page 136) followed by the motivation of the development of an integrated financial decision-making model using lean accounting principles (Section 6.3, page 139).

In the development of an integrated financial decision-making model using lean accounting principles no framework was found in the literature. Section 6.4 (page 144) provided the framework for designing the integrated financial decision-making model. Using grounded theory (Section 5.4, page 105) elements were identified that needed to be included in the model. By using a fusion of grounded theory and multiple case study the developed model was simultaneously evaluated. Using the results of the coding process the model was developed to include a combination of traditional financial decision-making models combined with lean accounting principles. Table 6-1 (page 147) illustrated the developed integrated financial decision-making model using lean accounting principles.

The integrated model combined value stream performance, box reports and traditional financial decision-making models and by adjusting the annual financial reports to conform to VSPR. These results were then visually reported to include; previous-, current-, and future financial periods. The empirical findings of the study are discussed in the next section. Allowing the ability to draw a conclusion of whether the newly developed integrated financial decision-making model using lean accounting principles influences the decision-making ability of stakeholders.

8.2.8 Evaluating the influence of the newly developed model on stakeholders' decision-making

The eighth and final secondary research objective as stated in Chapter 1 (Section 1.4, page 6) was to evaluate whether the newly developed integrated financial decision-making model using lean accounting principles can indeed assists to influence the decision-making abilities of stakeholders. The research methodology in Chapter 5 (page 96) and the empirical findings that were discussed in Chapter 7 (page 187) are summarised in this section. The summary of the research methodology is provided in Section 8.2.8.1 (page 271) followed by a summary of the empirical findings (Section 8.2.8.2, page 271). This is followed by a conclusion, based on the empirical findings,

whether the newly developed integrated financial decision-making model using lean accounting principles influencing the decision-making capability of stakeholders.

8.2.8.1 Research methodology

A theory building approach using a hybrid of grounded theory and multiple case study was used to determine the relationships and distinct qualities of the constraints of lean accounting principles and the impact on financial decision-making. Chapter 5 (page 96) explained the research design (Section 5.2, page 97), research methods available (Section 5.3, page 101) and the research methodology applicable to this study (Section 5.4, page 105). Furthermore, the gathering of data and the analysis thereof were discussed in Section 5.5 (page 111). Section 5.6 (page 131) comments on the reliability, validity and generalisation of the findings.

8.2.8.2 Empirical findings

The empirical findings and results of the data analysis were reported in Chapter 7 (page 187). The results provided a critical analysis that describe and explained the development of the integrated financial decision-making model. The findings and results of this chapter has been divided into the following main themes:

i. An integrated financial decision-making model using lean accounting principles (Section 7.2, page 188) that encapsulate the findings on:

   - Financial decision-making motives and information requirements.
   - Reporting on the deficiencies of current financial decision-making models.
   - The lean accounting principles applied to the study namely; value stream performance measures, box reports and VSFP. Reporting the results on both traditional- and the developed lean model.

ii. The impact of financial decision-making was discussed in Section 7.3 (page 226) whereby each of these measured companies was scored in terms of both the traditional- and newly developed financial decision-making model.

iii. By making use of a contrariwise Mendelow matrix (Figure 7-2, page 242) it was concluded that the newly developed financial decision-making model is useful to indicate whether a calculated score are acceptable or not to the stakeholders (Section 7.4, page 242).

iv. The results obtained using the traditional – and newly developed financial decision-making model was summarised and the findings were reported in Section 7.5 (page 243). By comparing the scores obtained from the traditional – and newly developed financial decision-making model it can be concluded that the decision-making of stakeholders would be influenced as scores differs.

v. Finally to test the reliability results obtained by the integrated model and reporting on whether the model will assists in enhancing the decision-making ability of all stakeholders, a comparison between the Du Pont analysis of the traditional – and lean accounting was done (Section 7.6, page 255). By comparing the ROE of the two models a conclusive opinion was formulated. The conclusive opinion is that because the ROEs are different the newly developed financial decision-making model using lean accounting principles will influence the decision-making of stakeholders. Therefore it can be deduced that the eight secondary research objective has been successfully been addressed.

In view of the aforementioned findings the next section wants to make some recommendations.

8.3 Recommendations (Findings)

In view of the findings and conclusions of each of the secondary research objectives this study would make the following recommendations.

i. In examining the changes in the business environment it can be recommended that accounting standards need to be adjusted to be able to supply stakeholders with quality integrated reports that will be useful for stakeholders' decision-making requirements.

ii. In the accountant's quest of providing accurate relevant and timeous financial information it is necessary to be business partners. By becoming business partners accountants need to develop purposeful financial decision-making models that focus on the individual stakeholders' needs.

iii. In order to improve the decision usefulness to stakeholders the accounting profession should consider implementing lean accounting principles. By implementing lean accounting principles the shortcomings of traditional accounting would be addressed.

iv. It is imperative that lean accounting include value streams as it is totally different than traditional accounting. The value stream is an important part of lean accounting as it will continuously focus decision-making on value adding and waste reduction activities.

v. The integrated financial decision-making model using lean accounting principles should therefore include value stream box reports. These reports present information to stakeholders in an understandable format, while reported financial information is adjusted to adhere to VSPR requirements.

vi. Scholars engage in future studies relating to decision-making models should consider making use of the hybrid methodology, using grounded theory and multiple case study. The simultaneous use of grounded theory and multiple case study provided a unique opportunity to develop new theories from existing theories and testing these emerging theories and adapting it therefore insuring robustness.

8.4 Concluding on the primary research objective

The primary research objective of this study intended to (Section 1.4, page 6):

"Develop an integrated financial decision-making model using lean accounting principles that will lead to more conservative results that will influence the decision-making of all the company's stakeholders whether or not it uses different accounting standards."

The objective was to achieve the overall primary research objective by firstly performing a vigorous literature in Chapters 2 to 4 (page 16 to page 71) and drawing some important conclusions from it. The empirical findings were obtained using a mixed methodology, as specified in Chapter 7 (page 187 to page 259), along with the recommendations made in this chapter (Section 8.3, page 272). The eight secondary research objectives that substantiate the overall primary research objective were summarised in Section 8.2.8 (page 266).

According to these findings, it can be concluded that the newly developed integrated financial decision-making model using lean accounting principles can indeed influence the decision-making abilities of all the companies' stakeholders irrespective of the accounting standards that are applicable. Therefore it can be argued that the primary research objective of this study was achieved.

The next section provides a discussion on how this study contributes to management accounting as well as financial management and more specifically to financial decision-making models internationally.

8.5 Contributing to the body of knowledge on financial decision-making models

The study should assist in bringing change to financial decision-making models across the world. The study has made the following contributions in general to management accounting, financial management and in integrated financial decision-making models using lean accounting principles specifically in:

i. Outlining the importance of the continuous development and application of accounting standards to provide stakeholders with quality, accurate, relevant and useful accounting reports upon which decision-making can be made.
ii. Furthermore, the study revealed the importance of developing individualised integrated financial models to meet the different stakeholders' decision-making requirements. Indicating that there is no one size fit all and that these models should consider financial and non-financial factors.
iii. Due to the continuously changing environment in which business are conducted, lean accounting principles can be used to influence financial decision-making models.
iv. In developing an integrated financial decision-making model using lean accounting principles the study suggested a framework for designing future integrated financial decision-making models (Section 6.4, page 144).
v. A newly developed integrated financial decision-making model using lean accounting principles contributes to the literature, by adding an original and integrated approached to financial decision-making models, which include value streams performance measures, box reports and VSFP that provide visual and understandable accounting information that highlights the areas that require continuous improvement.
vi. The effectiveness of the newly developed integrated financial decision-making model was tested by determining the score of financial and non-financial data of a company (Section 7.4, page 242) using the results of both the traditional and newly developed models.

vii. Recommendations were made on the findings of this study as how the newly developed integrated financial decision-making model can be applied by stakeholders (Section 8.3, page 272).

viii. Areas of further research that could contribute to provide the robustness of this study as identified in Section 8.7 (page 276).

The study further contributed to the research methodology that could be used in management accounting research. This study used a hybrid of grounded theory and multiple case study methodology. This was explained in Chapter 5 (page 96). The secondary data collected for the study was done by using document analysis. Document analysis provides both convenient and reliable data also proved to be valuable in management accounting research. The aforementioned focus on the usefulness of the research methodology and data collection method in management accounting, however, it can be argued that it can also be of value in many other disciplines and would not be limited to accountancy.

No study is without limitations and the next section provides the limitations of this study and how it was addressed.

8.6 Limitations of the study

No study are without any limitation nor can any study supply all answers as no man knows it all, Proverbs 12:15 "*The way of a fool is right in his own eyes, but he who listens to counsel is wise"* (Bible, 1987). The next section reflects some of the limitations of this study.

i. The results of the qualitative analysis are limited with regard to its generalisability due to applying non-probability, convenience and quota sampling methods. The sample only considered listed companies on three stock exchanges, which operates in the same industry, using one of the three selected financial reporting standards. There are many more stock exchanges in the world, with different industries listed on each of these stock exchanges. Discriminating against the financial reporting standard is also a limitation. Chapter 2 (Section 2.5, page 33) indicated that there are efforts to standardise all accounting standards to one international accounting

standard and much has been done although many countries still apply their own standards.

ii. The three chosen companies are also very different although on the surface the companies appear to be the same. These differences can be seen from the summary of the descriptive statistics in Table 5-3 (page 116). Due to these differences the researcher took great care no to generalise on the findings of the three companies when the results were compared.

iii. No other control group or company was identified that resembled the sample's descriptive variables. The sample also only includes well-known companies to the researcher.

iv. Using document analysis to obtain the data, because it provides convenient and reliable data, no personal interaction was done with any of the companies. The data were taken as it appear in the reviewed document and analysed based on this. No further enquires were made to enquire about the treatment of certain of the data. In some cases it would have been more appropriate to discuss certain of the findings with officials of the companies in order to obtain a better understanding about the results that are unfolding.

Although great care was taken to ensure that all the themes that were identified were recorded and reported as precisely and accurately as possible, there is still the possibility that something has been overlook. In view of this the following section will put forward some suggestions for further research.

8.7 Suggestions for further research

The results, recommendations, contributions and limitations of this study as discussed in Sections 8.2 to 8.6 (page 265 to 275) point to several auspicious extents for further research opportunities. These future research opportunities could be based on both theoretical and applied research. These further possible research studies could also test the robustness of this suggested model that could strengthen management accounting research. The following areas for further research were identified:

i. The study could be expanded to all stock exchanges and all industries with the aim to corroborate or disprove the findings of this study. From this, a theory could be formed as to the best practice to develop financial decision-makings models.

Providing the opportunity to apply other qualitative data collection techniques, this could benefit research due to the numerous advantages that are an inherent part of the mixed research methodology.

ii. Further research that could be done to enhance the integrated financial decision-making model using lean accounting in this study to construct a more complex model. The integrated financial decision-making model using lean accounting may be expanded to include more levels of variables, and may also explore additional components of lean accounting as well as trying to gain a better understanding of the human decision-making process.

- The integrated financial decision-making model using lean accounting in this study is at the point in time after the companies' reports were published. Further research could expand the model to also consider the operational and strategic planning stages.
- The integrated financial decision-making model using lean accounting that is the outcome of this study is unambiguously concerned with evaluating the results of the developed financial decision-making model compared with the results of the traditional financial decision-making models. Further studies may enhance the model to include the PESTEL analysis also.
- By developing the integrated financial decision-making model using lean accounting this study did not consider any human perceptions, emotion and cognitive influences on the decision-making of stakeholders.

iii. This study was focused on the development of an integrated financial decision-making model using lean accounting. Using a fusion of grounded theory and multiple case study research in order to evaluate if the study reach the aim of the study. Subsequently there is also the prospect for further research to investigate an integer of applied aspects:

- Comparative analysis maybe carried out to compare the results of the integrated financial decision-making model using lean accounting to different industries in order to assess its resemblance or divergence regarding the findings of this study.
- Experimental research may be undertaken to investigate and evaluate whether the practical application of the integrated financial decision-making model using lean accounting substantially influence the decision-making of all companies' stakeholders.

- Survey research maybe embark to evaluate and inspect the influence and result of the practical implementation and use of the integrated financial decision-making model using lean accounting has on:
  - the influence on improving financial decision-making within the company;
  - the impact on the efficiency and effectiveness of the financial decision-making process of all stakeholders;
  - the realisation of enhanced reliability of decision-making across a particular industry; and
  - the effect on the solicitation of personal acuities on the financial decision-making by individual stakeholders.

The above-mentioned are all evocative areas for further research and are issues worthwhile investigating in future and may lead to more efficient and useful financial decision-making models. This may just be what the accounting profession needs to give the business world; becoming a business partner.

8.8 Conclusion

The integrated financial decision-making model using lean accounting that was developed in this study can be used by all stakeholders to influence financial decision-making by considering a more conservative approach. The integrated model also makes it possible for stakeholders to identify the areas in which the company needs improvement by quantifying the results. Throughout the course of this study, two main thoughts kept surfacing, namely that change is necessary due to the changing business environment and that all the variables, financial and non-financial should be considered when financial decisions are make by stakeholders.. The empirical findings of this study however only focussed on the financial variables. It was recognised that changing financial decision-making models to include lean accounting principles can indeed lead to more conservative results that will influence all stakeholders' decision-making. Based on the findings of this study, it can be concluded that accounting profession should supply all stakeholders with quality, timeous, accurate and useful information that will allow them to make decisions. This will not only ensure continuous improvement of the accounting profession, but will lead to an increase in value adding of accountancy to its users that ultimately guarantee the sustainability of the profession.This study complied with the objectives set out in chapter 1 and it can be concluded that when lean

accounting principles are used in an integrated financial decision-making model, more conservative results influence the decision-making of all the company's stakeholders whether or not using different accounting standards.

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ICAEW ***see*** Institute of Chartered Accountants of England and Wales.

ICAS ***see*** Institute of Chartered Accountants of Scotland.

IFAC ***see*** International Federation of Accountants.

IFRS ***see*** International Financial Reporting Standards.

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ANNEXURE A

FINANCIAL RATIO FORMULA SHEET

Financial ratio	Formula
Return on assets ratio (ROA)	$ROA = \frac{EBITA}{Total\ Assets}$
Return on equity ratio (ROE)	$ROE = \frac{Earnings\ atributable\ to\ ordinary\ shareholders}{Total\ Equity}$
Earnings per share (EPS)	$EPS = \frac{Earnings\ atributable\ to\ ordinary\ shareholders}{Total\ number\ os\ ordinary\ shares\ issued}$
Price earnings ratio (P/E)	$PE = \frac{Market\ price\ per\ share}{Earnings\ per\ share}$
Economic value added (EVA)	$EVA = NOPAT - (WACC\ x\ CI)$
Market value added (MVA)	$MVA = Total\ Market\ Value - Total\ Capital\ Invested$
Cash flow return on investment (CFROI)	$CFROI = Sustainable\ Cash\ Flows \div Current\ Rand\ Gross\ Investment$
Cash value added (CVA)	$CVA = (CFROI - WACC)\ x\ Current\ Rand\ Gross\ Investment$
Economic depreciation (ED)	$ED = [WACC \div (1 + WACC)^t - 1] x\ Depreciating\ Assets$
Total shareholders' interest to total assets (TSITA)	$TSITA = \frac{Total\ share\ capital + Reserves}{Total\ Assets}$

ANNEXURE A (CONTINUED)

FINANCIAL RATIO FORMULA SHEET

Financial ratio	Formula
Total assets to Total liabilities (TATL)	$TATL = \frac{Total\ Assets}{Total\ Liabilities}$
Equity to total Shareholders' interest (ETSI)	$ETSI = \frac{Ordinary\ share\ capital + Premium + Reserves}{Total\ Shareholders' interest}$
Debt/Equity ratio (D/E)	$D/E = \frac{Total\ Debt}{Total\ Equity}$
Shareholders' interest (SHI)	$SHI = \frac{Long - and\ short - term\ liabilities}{Total\ Shareholders'\ Interest}$
Current ratio (CR)	$CR = Current\ assets : Current\ liabilities$
Quick ratio (CR)	$QR = Current\ assets - Inventory : Current\ liabilities$
Net investment in working capital (NIWC)	$NIWC = \frac{Inventory\ +\ Accounts\ Receivable\ -\ Accounts\ Payable}{Turnover}\ x\ \frac{365}{1}$
Debtors collection period (DCP)	$DCP = \frac{Accounts\ Receivable}{Turnover}\ x\ \frac{365}{1}$

ANNEXURE A (CONTINUED)

FINANCIAL RATIO FORMULA SHEET

Financial ratio	Formula
Creditors payment period (CPP)	$CPP = \frac{Accounts\ Payable}{Cost\ of\ Sales}\ x\ \frac{365}{1}$
Inventory turnover (IT)	$IT = \frac{Cost\ of\ Sales}{Average\ Inventory}$
Safety margin ratio (SM%)	$SM\% = \frac{Turnover\ -\ Breakeven\ point}{Turnover}\ x\ \frac{100}{1}$
Interest cover (IC)	$IC = \frac{Earnings\ before\ Interest\ and\ Taxation\ (EBIT)}{Total\ interest\ paid}$
Preference dividends cover (PDC)	$PDC = \frac{Earnings\ Attributable\ to\ Shareholders\ \ (EATS)}{Preference\ Dividend\ paid}$
Ordinary dividends cover (ODC)	$ODC = \frac{Earnings\ Atributable\ to\ Ordinary\ Shareholders\ \ (EATOS)}{Ordinary\ Dividend\ paid}$
Fixed charged covered (FCC)	$FCC = \frac{Earnings\ before\ Interest,\ \ Taxation\ and\ Fixed\ charges\ \ (EBITFC)}{Interest\ paid + Fixed\ charges}$

ANNEXURE A (CONTINUED)

FINANCIAL RATIO FORMULA SHEET

Financial ratio	Formula
Growth in Sales (GIS)	$GIS = \frac{Turnover\ current\ year\ -\ Turnover\ previous\ year}{Turnover\ pervious\ year}\ x\ \frac{100}{1}$
Growth in Earnings (GIE)	$GIE = \frac{EATOS\ current\ year\ -\ EATOS\ previous\ year}{EATOS\ pervious\ year}\ x\ \frac{100}{1}$
Growth in Dividends (GID)	$GID = \frac{Dividends\ current\ year\ -\ Dividends\ previous\ year}{Dividends\ pervious\ year}\ x\ \frac{100}{1}$
Growth in Net Asset Value (GINAV)	$GINAV = \frac{NAV current\ year\ -\ NAV\ previous\ year}{NAV\ pervious\ year}\ x\ \frac{100}{1}$
Critical Growth Rate (CGR)	$CGR\ =\ \frac{\frac{Profits\ ploughed\ back}{Turnover}}{\frac{Net\ working\ capital}{Turnover} - \frac{Profits\ ploughed\ back}{Turnover}}\ x\ \frac{100}{1}$
Funds required to finance growth (FRTFG)	$FRTFG\ =\ \left(Increase\ in\ Turnover\ (R)\ x\ \frac{NWC}{Turnover}\right) - \left(Increase\ in\ Turnover\ (R)\ x\ \frac{Profits\ ploughed\ back}{Turnover}\right)$

ANNEXURE B

CONFIRMATION OF ARTICLE SUBMISSION



The Journal of Economic and Financial Sciences

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Review

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ANNEXURE C

CONFIRMATION OF LANGUAGE EDITING



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DECLARATION OF LANGUAGE EDITING

9 November 2017

To whom it may concern

This is to confirm that I, the undersigned, have language edited the completed research of *MJ Swanepoel* for the *Philosophia Doctor in Management Accounting* entitled: *The development of an integrated financial decision-making model using lean accounting*

No changes were permanently affected and were left to the discretion of the student. The responsibility of implementing the recommended language changes rests with the author of the thesis.

Yours truly

Jomoné Müller