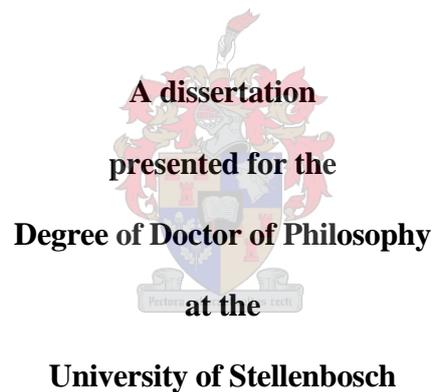


**A strategic architecture and its role in enhancing
the performance of commercial web-enabled
enterprises**

by

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Degree of confidentiality: A

December 2005

DECLARATION

Hereby I, Glen Martin Mansfield, declare that this dissertation is my own original work and that all sources have been accurately reported and acknowledged, and that this document has not previously in its entirety or in part been submitted at any university in order to obtain an academic qualification.

G M Mansfield

December 2005

ABSTRACT

In the economic paradigm of the previous century a well-crafted strategy delivered successful competitive advantage. This research questions whether, with the advent of the internet and its networked economy, this premise remains valid. In the past, technological shocks such as the telephone, railroads and electricity changed the way markets worked. Noting this, some astute practitioners developed effective patterns of competitive behaviour and achieved results of lasting value. The internet has precipitated a similar disturbance and may be consigned to a matching destiny. Today's internet pioneers are the electronic businesses competing at the frontiers of strategy by learning, innovating and doing. This study, conducted at the early, emergent phase of the internet, endeavours to determine the strategy characteristics of winning firms. Once the competitive advantages accruing to online businesses through the deployment of internet technologies disappear, all business will inevitably find itself in the networked economy - the findings of this work may prove of timeous benefit to such as these.

Two conceptual research constructs, strategic architecture and business performance, are developed. Their origins are found in the literature covering the academic fields, *inter alia*, of strategy, business models, electronic commerce, knowledge management, information technology, and dynamic capability. The primal roots of strategic architecture are strategic intent and value creation. Drawing parallels from the construction field, strategic architecture is posited as a fundamental foundation on which the entire organisation is built. Akin to organisational culture it reflects the attitude and behaviour of management in their pursuit of sustainable competitive advantage. It provides a reasoned judgement of business performance.

The strategy literature identifies as dimensions: futurity, defensiveness, innovation, systems, risk and analysis. The literature on e-commerce and business models further refines this list to add economic innovativeness, value creation, customer centricity, intermediation and infrastructure. The domain of strategic architecture is further explored in the light of dynamic capability, harmony and knowledge management. The construct is operationalised by further reference to the literature. The construct of business performance is similarly developed from the literature. The study begins by locating business performance as a subset of organisational effectiveness, and includes traditional and historical measures. It embraces the entrepreneurship literature and incorporates metrics in use by electronic businesses. The chapter

concludes with scorecard-based metrics. Business performance is synthesised into the dimensions of efficiency, productivity, growth, profit and market share and operationalised accordingly. A measuring instrument using a six-point Likert scale was formulated. Its content and structure were further purified by local and international expert and academic opinion. The final questionnaire was posted on a website with prudent programming that prevented duplicate submissions and minimised bias and coding errors.

The study selected South African commercial, web-enabled, electronic businesses as the population. Public domain sources were used in identifying potential respondents. Membership rules included the need for a respondent to have an active web presence, show evidence of online trading, have an appropriately secure website and comply with legislation. The correct contact person was identified and invited, by telephone, to participate. A password for site access was emailed. To motivate respondents each was offered a view of the aggregated responses after data submission. Following pilot testing the instrument was suitable for administration.

In total 192 businesses were identified. Personal emails were sent to 144. There were 69 respondents. The initial dataset was made smaller by a high number of non-responses to items in the performance section of the questionnaire. There appeared to be a reluctance, or inability, on the part of respondents to supply the requisite performance data. A trade-off between measures of performance and usable cases provided 39 cases for analysis. Overall the instrument delivered a Cronbach coefficient α of more than 70%. One dimension and three items were rejected prior to statistical analysis.

The regression models established a positive relationship between strategic architecture and performance. The most significant dimensions were customer centricity and dynamic pliancy. Further tests showed that pure-play firms have different strategic architectural compositions from those businesses that began as offline ventures. The findings delivered rationally explicable implications for management, consistent with theory and/or best practice. Findings such as the importance of effective communications, the alignment between business objectives and information technology, and the key role of innovation were also observed. Dynamic pliancy appears to be the dominant characteristic of success. This study shows that for this group of commercial web-enabled ventures, effective strategic architecture indicates success – and finds, in short, that customer-centred dynamism characterises winning firms.

OPSOMMING

In die ekonomiese paradigma van die vorige eeu was die algemene opvatting dat 'n goed-geformuleerde strategie 'n mededingende voordeel vir 'n organisasie inhou. Hierdie empiriese studie bevraagteken egter of die bepaalde standpunt, met die ontwikkeling van die internet en die netwerk-geskakelde ekonomie, nog stand hou. In die verlede het tegnologiese ingrepe, soos die telefoon, spoorweë, en elektrisiteit, die landskap van markte en handel verander. Op vroeë stadiums het skerpsinnige bestuurders doeltreffende planne vir mededingende optrede beraam wat vir 'n geruime tyd vir hulle voordele besorg het. Mettertyd het die uniekheid van die voordele egter begin verdwyn, maar sommige maatskappye wat 'n aanvanklike voorsprong geniet het, het die res 'n stap voor gebly. Die internet het 'n soortgelyke versteuring teweeggebring, en mag dieselfde resultaat as die vorige tegnologiese ingrepe tot gevolg hê. Vandag se internet-pioniers is die besighede wat by die strategiese fronte wedywer deur te leer, te innoveer, en te doen. Hierdie studie is tydens die vroeë ontwikkelingsfase van die internet aangepak en poog om die strategie-eienskappe van die wenners onder sulke pioniers te bepaal. Weldra sal die internet 'n integrale deel van die totale besigheidslandskap wees, en sal die voordele gekoppel aan die uniekheid van internet-sake, verdwyn. Die bevindings van hierdie studie mag in hierdie tyd van verandering van waarde wees vir maatskappye wat hierdie netwerk-geskakelde ekonomie moet betree.

Twee konsepsuele navorsingskonstrukte, strategiese argitektuur en besigheidsprestasie is ontwikkel. Die oorsprong is in die literatuur van, onder andere, strategie, besigheidsmodelle, elektroniese handel, kennisbestuur, inligtingstelsels, en dinamiese vermoë. Die oorsprong van die konsep strategiese argitektuur is vanuit die bekende konsepte strategiese intensie en waardeskepping. Analoog aan gebou-konstruksie, word strategiese argitektuur voorgestel as die fundamentele ontwerp waarop die hele organisasie staan. Soortgelyk aan organisatoriese kultuur, weerspieël strategiese argitektuur die denkpatrone van bestuur in hul soektog na selfonderhoudende mededingende voordeel in die netwerkgebaseerde ekonomie. Die konsep bied 'n beredeneerde maatstaf van bestuurseffektiwiteit.

Die strategie-literatuur bring dimensies soos toekomsgerigtheid (futuraity), verdediger-oriëntasie (defensiveness), innovasie, stelsels, risiko, en analitiese vermoë na vore. Die vakgebiede van e-handel en besigheidsmodelle voeg dimensies soos ekonomiese innovasie,

waardeskepping, kliëntgesentreerdheid, bemiddeling, en infrastruktuur hierby. Die domein van strategiese argitektuur word uitgebrei aan die hand van dinamiese vermoë, harmonie, en kennisbestuur. Die konstruk word geoperasionaliseer deur 'n diepgaande studie van literatuurbronne rondom die dimensies ter sprake.

Die konstruk van besigheidsprestasie is op soortgelyke wyse uit die literatuur ontwikkel. Die studie begin met besigheidsprestasie as 'n komponent van organisasie-doelmatigheid. Dit word beïnvloed deur die literatuur oor entrepreneurskap, en bepaalde metingsmodelle in elektroniese ondernemings. Die hoofstuk het 'n tellinggebaseerde metingsmodel tot gevolg. Besigheidsprestasie word saamgestel uit dimensies van doeltreffendheid (efficiency), produktiwiteit, besigheisgroei, wins, en markaandeel, en word sodanig geoperasionaliseer.

'n Metingsinstrument gebaseer op 'n sespunt-Likertskaal is opgetrek. Die inhoud en struktuur hiervan is verder gesuiwer deur dit aan die mening van kundiges en akademici, plaaslik sowel as internasionaal, te toets. Die finale vraeboog is op 'n webwerf geplaas. Deur noukeurige programmering is die moontlikheid van duplikaat-invulling vermy, en sistematiese vooroordeel en koderingsfoute geminimiseer.

Die studie kies Suid-Afrikaanse kleinhandel ondernemings betrokke in elektroniese handel as populasie. Openbare bronne is gebruik om potensiële respondente te identifiseer. Die reëls vir die vasstelling van die populasie het onder andere bepaal dat die deelnemer 'n aktiewe teenwoordigheid op die web moet hê, 'n bewese rekord van webhandel het, en binne bestaande wetgewing funksioneer. Die aangewese persoon is geïdentifiseer en is telefonies uitgenooi om deel te neem. 'n Wagwoord vir toegang tot die webwerf is per e-pos gestuur. As aansporing is deelnemers, na voltooiing van die vraeboog, toegang gegee tot 'n grafiese opsomming van die kumulatiewe data. Na 'n aanvanklike toetsfase is die instrument as geskik vir opname-doeleindes beskou.

'n Totaal van 192 besighede is geïdentifiseer. Persoonlike e-posse is aan 144 gestuur. 'n Totaal van 69 het deelgeneem. Die aanvanklike datastel ontvang is ingekort as gevolg van 'n groot aantal nie-response met betrekking tot die prestasie-meting gedeelte van die vraeboog. Daar was klaarblyklik 'n onwilligheid, of onvermoë, by deelnemers om die gevraagde prestasie-data te verskaf. 'n Kompromie tussen prestasie-meting en bruikbare datastelle lewer 'n totaal van 39 deelnemers vir ontleding. In geheel lewer die instrument 'n Cronbach

koëffisiënt α van meer as 70%. Een dimensie en drie verdere items is verwerp voordat die statistiese ontleding gedoen is.

Die regressie-ontledings bevestig 'n positiewe verwantskap tussen strategiese argitektuur en prestasie. Die mees beduidende dimensies is kliëntgesentreerdheid en dinamiese plooibaarheid. Verdere ontledings toon dat die suiwer internet-gebaseerde ondernemings se strategiese argitektuur samestellings verskil van diegene wat as konvensionele ondernemings begin het. Die bevindings lewer logies verklaarbare gevolge vir bestuur, versoenbaar met die teorie en/of beste praktyke. Verdere waarnemings, soos die belangrikheid van goeie kommunikasie, die belyning tussen sakedoelwitte en inligtingstegnologie, en die sleutelrol van innovasie, word ook gemaak. Dinamiese plooibaarheid kom voor as die oorheersende kenmerk van sukses. Die studie toon dat, vir die groep bestudeerde internet-gebaseerde ondernemings, 'n doelmatige strategiese argitektuur inderdaad sukses aandui. Ten slotte is kliëntgesentreerde dinamika dié faktor wat wenondernemings van die res onderskei.

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This work is dedicated to those people in business challenged by the networked economy. Those who learn by doing. May what you do, now, be that much better.

TABLE OF CONTENTS

DECLARATION	ii
ABSTRACT	iii
OPSOMMING	v
ACKNOWLEDGEMENTS	viii
LIST OF TABLES	xiii
LIST OF FIGURES	xv
LIST OF APPENDICES	xvi
CHAPTER 1: NATURE AND SCOPE OF THE STUDY	1
1.1 INTRODUCTION	1
1.2 THE STUDY RATIONALE	3
1.3 RESEARCH TOPIC	9
1.4 RESEARCH OBJECTIVES	11
1.5 THE SCOPE AND LIMITATIONS OF THE STUDY	11
1.6 METHODOLOGY	14
1.7 LAYOUT OF THE DISSERTATION	19
1.8 IN SUMMARY	20
CHAPTER 2: CONCEPTS – INTERNET, WEB AND ELECTRONIC COMMERCE	22
2.1 INTRODUCTION	22
2.2 THE NETWORKED ECONOMY	22
2.3 THE INTERNET	23
2.4 WORLD WIDE WEB	25
2.5 INTERNET AND THE WORLD WIDE WEB	27
2.6 ELECTRONIC BUSINESS (E-BUSINESS) AND COMMERCE	28
2.7 IN SUMMARY	30
CHAPTER 3: DIMENSIONS AND MEASURES OF STRATEGY	31
3.1 INTRODUCTION	31
3.2 CORPORATE- AND BUSINESS-LEVEL STRATEGY	33
3.3 STRATEGY MEASUREMENT AND ITS APPLICATION TO THIS STUDY	34

3.4	PRE-1980 HISTORY OF STRATEGY MEASUREMENT	37
3.5	STRATEGIC GROUPS: STRATEGY AND PERFORMANCE	39
3.6	THE LINK BETWEEN MARKET SHARE AND PERFORMANCE	39
3.7	STRATEGY AND PERFORMANCE – A TAXONOMIC APPROACH	40
3.8	STRATEGY AND THE INDUSTRY LIFE-CYCLE	45
3.9	THE POSITIONING- AND RESOURCED-BASED VIEWS	47
3.10	DIMENSIONS OF STRATEGY	55
3.11	CONTRIBUTION TO STRATEGIC ARCHITECTURE CONSTRUCT	57
3.12	IN SUMMARY	61
	CHAPTER 4: BUSINESS MODELS AND THE STRATEGIC ARCHITECTURE	62
4.1	INTRODUCTION	62
4.2	THE ECONOMIC LANDSCAPE	63
4.3	THE KNOWLEDGE CONTRIBUTION	66
4.4	AN ECONOMIC VIEW OF ELECTRONIC MARKETS	68
4.5	INTERMEDIATION, DISINTERMEDIATION AND RE-INTERMEDIATION	71
4.6	THE ORIGINS OF VALUE AND EVOLUTION OF BUSINESS MODELS	73
4.7	THE CONTEXT OF THE BUSINESS MODEL	77
4.8	DEFINITIONS OF BUSINESS MODELS	78
4.9	CONCEPTUAL DIFFERENCES: BUSINESS MODELS AND STRATEGY	80
4.10	BUSINESS MODEL TAXONOMIES	84
4.11	COMPONENTS OF A BUSINESS MODEL	92
4.12	PROMOTERS AND INHIBITORS	96
4.13	BUSINESS MODELS AS A SOURCE OF CONSTRUCT DIMENSIONS	98
4.14	IN SUMMARY	101
	CHAPTER 5: THE DOMAIN OF STRATEGIC ARCHITECTURE	103
5.1	INTRODUCTION	103
5.2	DYNAMIC CAPABILITY	105
5.3	THE DIMENSION OF HARMONY	107
5.4	STRATEGIC ARCHITECTURE IN THE LITERATURE	109
5.5	THE CONSTRUCT OF STRATEGIC ARCHITECTURE	110
5.6	CONSTRUCT OPERATIONALISATION	117
5.7	IN SUMMARY	124

CHAPTER 6: A CONSTRUCT OF BUSINESS PERFORMANCE	125
6.1 INTRODUCTION	125
6.2 THE DOMAIN OF WEB-ENABLED BUSINESS PERFORMANCE	130
6.3 PRIMARY OR SECONDARY RESEARCH DATA	134
6.4 BUSINESS PERFORMANCE MEASURES	135
6.5 COMPLEXITY FROM INTANGIBLE ASSET PERFORMANCE	161
6.6 TRADITIONAL MEASURES OF VALUE	163
6.7 EMERGING MEASURES OF PERFORMANCE FOR E-BUSINESS	166
6.8 CONTROL VARIABLES	168
6.9 PRECAUTIONS IN THE MEASURES OF “SUCCESS” AND “FAILURE”	171
6.10 IMPLICATIONS FOR THE STUDY	171
6.11 THE SELECTION OF BUSINESS PERFORMANCE INDICATORS	172
6.12 IN SUMMARY	175
CHAPTER 7: STATISTICAL RESEARCH METHODOLOGY	178
7.1 INTRODUCTION	178
7.2 THE MEASURING SYSTEM	179
7.3 MEASUREMENT CONSIDERATIONS	181
7.4 SCALES AND MEASURES OF RELIABILITY	182
7.5 LIKERT SCALE	184
7.6 PRE-TESTING A QUESTIONNAIRE	184
7.7 THE WEB-BASED INSTRUMENT	185
7.8 INSTRUMENT ADMINISTRATION	187
7.9 SOURCES OF ERROR	189
7.10 POPULATION MEMBERSHIP RULES	193
7.11 DATA COLLECTION	197
7.12 THE SAMPLING PROCESS IN THIS STUDY	198
7.13 IN SUMMARY	200
CHAPTER 8: PROCESSING, ANALYSIS AND INTERPRETATION OF DATA	202
8.1 INTRODUCTION	202
8.2 DEMOGRAPHIC ANALYSIS (CONTROL VARIABLES)	202
8.3 USABLE DATA	208
8.4 INSTRUMENT RELIABILITY	212

8.5	REGRESSION MODELS	215
8.6	BEST-SUBSET REGRESSION ANALYSIS	224
8.7	CLASSIFICATION AND REGRESSION TREES (CART) METHOD	225
8.8	PLIANCY, CENTRICITY AND MARKET EXPLOITATION	227
8.9	CORRELATIONS – STRATEGIC ARCHITECTURE AND PERFORMANCE	230
8.10	FINDING: STRATEGIC ARCHITECTURE AND PERFORMANCE	233
8.11	PURE ONLINE AND HYBRIDS – DIFFERENT STRATEGY CONTENT	234
8.12	UNEXPECTED FINDING	236
8.13	THE DEVELOPMENT OF THE PERFORMANCE CONSTRUCT SCALES	237
8.14	IMPLICATIONS FOR MANAGEMENT	241
8.15	IN SUMMARY	248
CHAPTER 9: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS		250
9.1	THE STUDY - IN SUMMARY	250
9.2	CONCLUSIONS	256
9.3	RECOMMENDATIONS	259
9.4	RECOMMENDATIONS FOR FURTHER STUDY	264
LIST OF SOURCES		266
APPENDICES		295

LIST OF TABLES

Table 1.1: E-business categories	6
Table 3.1: Typologies and their strategies	42
Table 3.2: The SWOT analysis	48
Table 3.3: Limitation of Porter's approaches in networked economy environments	57
Table 3.4: Emerging strategy dimensions for strategic architecture	59
Table 3.5: Emerging competencies as possible dimensions of strategic architecture	60
Table 4.1: US employment by sector (percent of total)	64
Table 4.2: Timmers' classification of business models	87
Table 4.3: Rappa – categories of business models	90
Table 4.4: Components of a business model – Afuah and Tucci	92
Table 4.5: A summary of business model components	93
Table 4.6: Elements of business model components	94
Table 4.7: The dimensions of business models	100
Table 5.1: The concepts of strategy and business models	103
Table 5.2: Conceptual differences in the strategic architecture concept	113
Table 5.3: The dimensions, source and measures of strategic architecture	117
Table 6.1: Metrics for growth and performance	127
Table 6.2: Dimensions of performance and the frequency of occurrence	137
Table 6.3: Performance dimensions and frequency of use (more than once)	138
Table 6.4: Class I metrics - assessing participant performance in electronic markets	141
Table 6.5: Class II metrics - assessing digital readiness	143
Table 6.6: Class III metrics - assessing marketplace collaboration	145
Table 6.7: Performance metrics for business drivers	147
Table 6.8: Categories of technical e-commerce metrics	151
Table 6.9: Balanced scorecard	153
Table 6.10: Metrics desired outcomes and focus	155
Table 6.11: Business model appraisal levels	157
Table 6.12: Authors and performance measures 1986 – 2001 (summarised)	159
Table 6.13: Authors and performance measures – recent (summarised)	160
Table 6.14: Dimensions of the performance construct and its measures	174
Table 6.15 Performance construct dimensions, measures and items	175

Table 7.1: Steps in the sampling process	199
Table 8.1: Response distribution	203
Table 8.2: Functional level of respondent	204
Table 8.3: Performance construct: Trade-off between items and usable cases	209
Table 8.4: Instrument reliability for measurement of dimensions	212
Table 8.5: Summarised regression details	216
Table 8.6: Correlations between strategic architecture and performance	232
Table 8.7: The differences in the strategic architecture of pure and hybrid firms	234

LIST OF FIGURES

Figure 2.1: Alternative forms of the e-business: e-commerce relationship	30
Figure 3.1: Classification of strategy development	44
Figure 4.1: Convergence and collaborative strategies	66
Figure 4.2: The knowledge hierarchy	67
Figure 4.3: The business logic triangle	81
Figure 4.4: Trends in the development of strategy	83
Figure 4.5: The business web typology	85
Figure 4.6: Integration-Innovation matrix	88
Figure 4.7: Timmers – business model evolution on the matrix	89
Figure 4.8: The pillars of the business model ontology	95
Figure 5.1: Strategic architecture and its relationship to business performance	111
Figure 6.1: Bounding the domain of business performance	133
Figure 6.2: Alternate approaches to measuring business performance	134
Figure 8.1: Respondent annual turnover (n=39)	205
Figure 8.2: Number of full-time equivalent staff (n=39)	206
Figure 8.3: Type of business (n=39)	206
Figure 8.4: Year online trading began and online-trading period (n=39)	207
Figure 8.5: Correlation – Futurity and performance	217
Figure 8.6: Correlation - Customer centricity and performance	218
Figure 8.7: Correlation – Market exploitability and performance	219
Figure 8.8: Innovative aggressiveness and performance (small and large firms)	222
Figure 8.9: Correlation – Harmony and performance	223
Figure 8.10: Correlation – Dynamic pliancy and performance	224
Figure 8.11: Graphic: Best subset analysis	225
Figure 8.12: CART analysis output	226
Figure 8.13: Bootstrap presentation of significant dimensions and performance	227
Figure 8.14: Regression – Strategic architecture and Performance (11 dimensions)	230
Figure 8.15: Regression – Strategic architecture and Performance (6 dimensions)	231
Figure 8.16: Regression – Strategic architecture and Performance (3 dimensions)	231
Figure 8.17: Responses to the Performance Construct questions	240

LIST OF APPENDICES

APPENDIX A - RESPONDENT DATA	296
APPENDIX B - STANDARD PHRASES USED IN THE SURVEY	305
APPENDIX C - PILOT STUDY - EMAIL SOLICITING PARTICIPATION	307
APPENDIX D - PILOT STUDY - EMAIL REQUESTING COMMENTS	309
APPENDIX E - EMAIL REQUESTING PARTICIPATION	311
APPENDIX F - REMINDER EMAIL TO NON-RESPONDENTS	313
APPENDIX G - EMAIL THANKING RESPONDENTS	315
APPENDIX H - QUESTIONNAIRE	317
APPENDIX I - BEST SUBSETS REGRESSION TABLES	323
APPENDIX J - CORRELATION MATRIX	325
APPENDIX K - APPEAL EMAIL	329
APPENDIX L - LIST OF EXPERTS	331
APPENDIX M - POPULATION	333

*“Experts cite **the lack of a sound business plan** and a diminished regard for basic marketing and management practices as major reasons for the failure rate of Web-based retailers. The dot-com platform alone was often viewed as a sufficient basis for business success” (Bertsch, Busbin & Wright, 2002).*

*“Internet companies were in such a rush to go public that many forgot one small detail: They needed a **sound business plan**. Business plans seemed so Old Economy in 1999. After all, the New Economy was supposed to come with its own set of business rules where everything worked out in the end as long as you had leading market share. Guess what? Not only did the old rules of business still apply, but even more so as the Internet magnified their importance” (Krantz, 2000).*

“Ask big companies about their goals for the Web, for example, and they are likely to reply, ‘Cautious testing’. Ask dot.coms the same question, and they declare, ‘Total world domination!’” (Kanter, 2001a).

CHAPTER 1

NATURE AND SCOPE OF THE STUDY

1.1 INTRODUCTION

This introductory chapter creates the context for this work and discusses the research design and literature study.

1.1.1 Background

The commercial use of the internet¹ represents one of the most fundamental business developments of the previous century. The internet and its technologies now impact on almost every business in some form. In the early stages of the web phenomenon, managers moved swiftly to embrace the opportunities it offered. Early entrepreneurs were hailed as visionaries by the business press and investor community. They were the revolutionaries reinventing business.

Amongst investors, favour towards online ventures contrasted sharply with the indifferent attitude towards “traditional”, or non-online businesses. Much of the presumed success particularly of the online start-ups resulted from the wild valuations they commanded on share markets. Traditional measures of business quality such as return on investment, profitability, and market share were disregarded in favour of a “good business model”. This all changed with the “dot.com² crash” of early 2000. The failures of some high profile electronic commerce businesses have been well documented (Afuah & Tucci, 2003; Chaffey, 2002; Finkelstein, 2001; Straub, 2004).

The South African markets have also had their share of spectacular failures (Goldstuck, 2002). Many of the larger financial institutions invested tens of millions of Rands in ventures

¹ The next chapter elaborates on the terminology used in the dissertation. It also explains origins and differences, for example, between the internet and the web.

² The descriptor “dot.com” refers specifically to web-enabled start up firms that commenced trading in the late 1990s and is derived from the last three letters of their high level domain name. The “.com” high level domain suffix initially applied to predominantly USA-based online businesses. It later became a generic term referring to all “global” commercial, online businesses.

which, for many reasons, eventually failed. There are, however, some enduring successes. In the United States, eBay is presently regarded as one of the most successful pure-online companies (Cohen, 2002). In South Africa, Kalahari.net is one of the oldest e-tailers.

Failures beg the question whether electronic commerce and the internet are doomed. There may be some that see this as a consequence of the dot.com collapse (Mandel, 2000). Others believe that this is not the case and view the failures as the normal consolidation of an industry that was over-optimistic and driven by greed (Turban, King, Lee, Warkentin & Chung, 2002:480). These authors view the failures as an example of history repeating itself and compare them to the early days of the motor industry in the United States when between 1904 and 1908 more than 240 companies entered the then new motor business. In 1910 there was a shake-out and today only three major motor firms exist. The size of the industry, however, has grown by several orders of magnitude. Afuah and Tucci (2003:97) present a more magnanimous rationale. They maintain that market forces fuelled the collapse. As thousands of new entrants flooded the market over a very short space of time, competition for scarce resources, such as capital and skills, increased; so did competition for market share, customers and suppliers. These conditions created an environment that rapidly curtailed the economic sustainability of many firms. Today, internet survivors exist in speciality and niche markets they have created for themselves. Daily, brick-and-mortar companies are adding online channels. This factor is seen as a return to confidence in the internet and its adjuncts. Investors are returning to web-enabled businesses as shown by the last two years' growth in the number of South African start-ups (Goldstuck, 2004a; Worthington-Smith, 2003). This trend is discussed later with the empirical findings of the study (refer to Section 8.2.6).

The dot.com “debacle”, however, inevitably raised the questions of how so many astute people, from investors to experienced executives, could be deceived, and what the underlying causes for the failures were (Straub, 2004). The answers are anything but trivial. Academics began their research by probing structural differences between online and traditional firms³. Finkelstein (2001), for example, whose findings typify those of other researchers in the litera-

³ The words “firm”, “business” and “company” and their plural forms have particular reference in this document. “Firm” is used in its broadest, economic sense describing a productive entity with a purpose. “Business” is used in the context of a functional, management-based venture driven by a profit motive through sustainable competitive advantage. “Company” refers to an entity incorporated in terms of national legislation. Occasionally, for semantic reasons, the terms are used interchangeably when the context of the discussion applies equally to all three forms.

ture, observed differences between traditional businesses and internet start-ups. Elements of strategy, such as speed of response, are important in the networked economy, but such forces are not necessarily present in formal traditional businesses. He identifies corporate governance as a contributing factor and cites the Investor Responsibility Research Centre, which found that internet companies have fewer independent directors than established companies. Directors from the traditional businesses did not transfer well to the networked economy. Many did not know which new warning signs to look out for, nor could they appreciate the importance of taking immediate action in the face of threats. Such executives came from organisations with established systems and processes and managed in cultures steeped in years of tradition, “and operate[d] in organisations characterised by considerably more clarity on appropriate business strategies and methods. None of these core attributes of their experience set existed in web start-ups” (Finkelstein, 2001:180). These findings are echoed by other studies such as the international investigation into business performance conducted by the Harvard Business School (Kanter, 2001a). Turban, *et al.*, (2002:479) attribute failures more specifically to lack of profitability, excessive risk exposure, high cost of branding, poor web performance, lack of funding and ineffectual business models. Barrow (2000:xi) also cites mismanagement and doubtful business models as contributing to failure. To prevent a recurrence, Chaffey (2002:59) exhorts managers to explore new business models, look for market opportunities, respond rapidly, and examine investment returns carefully. Kalakota, (2001:29) calls for a “new generation of e-business leaders”.

There is a strong desire for managers, aggravated by the impact of the internet on their businesses, to understand the complexities of this networked economy and how to compete more effectively in it (Chaffey, 2002). These needs provide the fundamental purpose for this study.

1.2 THE STUDY RATIONALE

This section introduces the subject of the study and considers its potential value.

1.2.1 Internet-based companies as a subject for research

Effectively managing internet-enabled businesses has equally serious implications for investors in South Africa than anywhere else in the world. It has taken several years for the consequences of the dot.com collapse, which began in the first quarter of 2000, to work their way out of the system. Now it is necessary to understand what management behaviour is needed

for sustained performance of networked economy businesses to prevent the recurrence of such disasters.

1.2.2 The challenges presented by the internet

In the 1960s the internet was established as a communication infrastructure by military agencies in the United States. Its key feature was an inherent ability to continue to function in the event of a nuclear explosion having destroyed one or more of its communication nodes. In the 1970s the internet began to be used by the research community for sharing data. In the mid-1990s, with the creation of the world wide web, it became available to business and was put into general commercial use.

Organisations that started using the web to publish simple electronic brochures soon began using the internet in almost every imaginable way, and the number of users grew exponentially. In South Africa it was reported (AMPS, 2003) that for the six months up to December 2003, approximately 1,7 million users, or about 6% of the total adult population, accessed the internet over a four week period. At the end of 2003 the global online population exceeded five hundred million users (Cyber-Atlas, 2003). The internet has provided a way for the consumer to be serviced conveniently and, when buying, to make the most advantageous purchase. It was seen as the delivery channel of the future, creating value, saving costs and cutting out expensive intermediaries.

Internet electronic commerce (e-commerce) trade volumes are substantial. For the first time, for one week ending 6 December 2002 trade passed the \$US2bn milestone (ComScore Networks, 2002). By 2004 online retail sales in the United States were expected to reach \$65 billion, a 24% increase over 2003. Sales are expected to grow by a compound annual growth rate of 17% to reach \$117 billion by 2008. The web accounts for a relatively small component of overall retail sales, which could increase to 5% by 2008. Consumers continue to research purchases online before buying in store. In fact, Jupiter Research forecasts that by 2008, nearly 30% of offline retail purchases could be influenced by consumers who performed online research (Jupiter Research, 2004). Online retail growth is fuelled by two main factors: new online buyers and increased average spending per buyer. As internet usage matures and the online population reaches saturation, the growth in new consumers choosing to buy online is expected to slow and reach a penetration of 67% of all online users by 2008. However, until

then, average spending per buyer growth will show a steady increase and is expected to reach \$780 by 2008 (Jupiter Research, 2004).

The concomitant impact of the internet on business practice has been substantive (Thompson & Strickland, 2001). An example of the many unique developments is disintermediation, which is discussed in greater depth later (refer to Section 4.5). Shortening the value chain enables goods to be sold directly to buyers with gains for the consumer and the manufacturer and its supply-chain.

It will be argued later that without effective and appropriate strategic management, the internet and/or its technologies are no panaceas for curing problems resulting from poor business models or hastily implemented strategies. The word “enable” is defined as “the ability to supply the means, knowledge or opportunity” (Houghton Mifflin Company, 1996). The web is an enabling technology but the facilitator focus with which it has been popularly endowed cannot serve as a substitute for an effective business strategy. It cannot drive an e-commerce business, yet, in practice today it is often assumed that the internet *per se* is the driving force. This incorrect perception has misdirected investors. This study will suggest that the internet is destined to follow a path similar to other disruptive technologies. The internet should provide opportunities for strategic advantage only for a certain period of time, in the same way perhaps as the telephone or railroads did for the early adopters in previous years. The end of the 20th century brought with it an abrupt end to the season of absurd investor gains and losses.

1.2.3 Developments in the post-millennium internet

In early 2000 many companies spawned directly by the internet began to issue profit warnings. This soon led to a global collapse in technology equities and resulted in wide-spread speculation as to the reasons for the losses. Today, notwithstanding improvements in the electronic business (e-business) environment, some concerns are still being raised. There remains a belief, for example, that internet-enabled business technology has not delivered on its promises and that there must be “some other way” of achieving success. There are also serious concerns regarding electronic payment security, exacerbated by the increase in hacker-related breaches. One industry observer (Dvorak, 2001) has even proposed, in his extremist view, that the internet be shut down for five years, *inter alia* to develop a secure transport protocol which can be used safely for all online transactions. Such a notion is absurd but does serve to

illustrate the depth of concern for the “openness” and “naïveté” of the infrastructural internet technologies on which so much trade depends. Notwithstanding these concerns, however, consumers and businesses have accepted the risks and voted that e-commerce should prevail as the delivery medium of the future.

1.2.4 Electronic business

As business applied the protocols and technologies made available by the internet, several broad classifications began to emerge. There are many variants, but the four categories of interest in this study are as follows:

Table 1.1: E-business categories

		Business originating from ...	
		Business	Consumers
And selling to...	Business	B2B (Business to business)	C2B (Consumer to business)
	Consumers	B2C (Business to consumer)	C2C (Consumer to consumer)

Source: Rayport & Jaworski, 2001:3

From the table above, the B2C category refers to those businesses using internet and web technologies primarily to sell products to consumers. Of all the four categories this is the most difficult to implement and most market- and strategy-sensitive. It is also the group which has had the greatest investor losses (Kanter, 2001a). Most of the other typologies generally gain efficiencies simply through effective systems and business process integration where standards such as that of extensible mark-up language (XML) facilitate interconnectivity. In contrast, electronic commerce processes impact upon every organisational function in the business, challenging management at every turn and giving rise to techniques and methods often vastly different from anything experienced before.

The typologies shown in Table 1.1 are by no means exhaustive. Government to consumer, and consumer to government are categories but, due to their predominantly non-commercial nature, do not form part of this study.

The exchange of physical goods and services was a feature of the industrial economy (Madhok, 2002). Efficiencies were gained through mass production and economies of scale. Today's networked economy distributes knowledge products such as software and entertainment at near-zero marginal cost, implying huge potential profits. These characteristics, considered by founders and entrepreneurs as "new" rather than "different", were seen to be accomplished simply with the assistance of a good "business model".

Business models form a large part of this study. A cursory introduction to the concept of a business model at this point contributes towards the context of the study by illustrating its complexity. Tapscott, Ticoll and Lowy (2000), in their book on business webs, offer a comprehensive definition. They define a business model as the totality of customer selection, offering delivery, in- and out-sourcing decisions, resource management, marketing and the fulfilment of the customer proposition – all resulting in business profitability. Rayport and Jaworski (2001) further develop the business model concept introducing elements of the networked economy on which the business model depends for its impact. They maintain that the choices in developing an effective model include specifying a value cluster for targeted, networked customers; a market offering; a unique, defensible resource system and a financial model. There is no one "ideal" model. These new and emerging concepts cut across functional responsibilities and extend beyond the traditional boundaries of the business, engaging management in increasingly complex tasks with different measures of performance.

Setting up an effective electronic business venture is no simple exercise. Gearing up the organisation to implement new and unproven technologies most often changes the way the firm does business (Chatterjee & Segars, 2002; Kanter, 2001a; Ragu-Nathan, Ragu-Nathan, Tub & Shi, 2001). This requires more wisdom and caution on the part of management than would be normally found with the implementation of a new corporate strategy such as the establishment of a new business unit or the development of a new product. Structure follows strategy (Chandler, 1969). The task of setting up corresponding organisational and functional structures in the networked economy creates further challenges for management. The evolution of e-commerce has resulted in radically changed strategies which have implications for other

elements of the business. Given this situation, the question is raised of how management and investors measure their success. This study will explore measures of business performance and create a construct from the literature that will form the dependent variable.

1.2.5 The case for studying behaviour of networked economy businesses

An assessment of international e-business research (Brint Research Portal, 2003) reveals studies being directed at the information technologies utilised, the business models which have been created or have evolved, the impact on the firm's supply-chain and the performance at the point of sale. There appears to be less empirical work done on the strategic factors in business that predicate success. It is possible, for example, that successful performance in the networked economy could result from the quest for sustainable, competitive advantage delivering profitability through value creation. Functional harmony, fostered by business managers between strategists and technologists, may also be a contributing factor. Furthermore, success may rely on more than a conventional strategy; it may extend beyond the business model. Success could flow from businesses that excel in the management of knowledge. Given the turbulence of the economic domain, success could also be predicated by the firm's agility and its adaptability. In practice, divisional or functional dissent and half-hearted commitment are not conducive to success.

The best crafted strategies, however, may not result in effective performance, unless, like a symphony, the different themes forming part of the construction are in perfect harmony with one another (Miller, 1996). There is a dearth in the literature of empirical studies that explore how e-commerce strategies are developed and implemented. There is a need to know the effective characteristics of such strategies, what new evaluation tools are being used and how human relation issues have impacted the new direction.

The value of an effective strategic foundation needs to be explored. The positive (or negative) correlation of factors such as the alignment of technology strategy with corporate objectives; the vision of the founder or chief executive officer; and the willingness of the various departments such as procurement, marketing, sales, accounts, information technology and others to cooperate in implementing a radically new, often untested, process, could all have an impact upon the ultimate performance of the business.

Finally, e-business as a field for academic research has global importance and relevance. This is evidenced by the 58 centres for e-commerce research established internationally by authoritative institutions of higher learning (Brint Research Portal, 2003).

The internet, or a derivative, is here for perpetuity. The literature study will demonstrate that it is not merely another distribution channel (Porter, 2001) or a transient phenomenon, but an economic development changing markets, consumer behaviour and business processes forever (Tapscott, 2001). Many new internet-based ventures are in the incubator. Their managers will need guidance. The lessons from the e-business failures have the potential to support this country's businesses in their quest for global competitive advantage. The most important contribution of this work, as internet-enabled companies slowly begin a return to normality, may be to better equip management for more effective strategic performance in the complex, evolving networked economy.

1.3 RESEARCH TOPIC

The title of this study is:

“A strategic architecture and its role in enhancing the performance of commercial web-enabled enterprises.”

Architecture, taken from the art and science of designing and erecting buildings, has common application in the information technology industry, where it describes the orderly arrangement or structure of, for example, an enterprise-wide computer system. It will be shown later that, in the context of this study, the concept “strategic architecture” is neither a framework nor strategy-set. In this sense it is a philosophy or orientation of a business – almost akin to an organisation culture. Strategic architecture will be motivated as a fundamental strategic foundation for a web-enabled venture to be successful. There is an additional benefit which may accrue when refraining from the use of terminology such as “strategy”, “framework” or “model”. This may assist in making this study more acceptable to practitioners of business management and their information technology peers, who may be prejudiced against such traditional phrases which could be construed as having unacceptable and confusing historical connotations.

The research constructs are literature-based. Their relationship is the subject of the empirical part of this study. Since there may be other factors contributing to the success of the internet-enabled businesses which do not form part of this study, the title is prefixed by the indefinite article “a”.

Strategic architecture, as applicable to the strategic business domain, is the name of the independent variable in the study. The structure of the architecture and its role in enhancing performance will be the product of this dissertation. In the title, the word “enhancing” is preferred to alternatives such as “contribution” or “impact”, since the latter is possibly too prescriptive and the former too general. Performance is the dependent variable. It was chosen above the phrase “business outcome”, which is occasionally encountered in the literature. Outcome could have had relevance to this study since it does attach a degree of measurement to performance. Semantically though, these words are considered insufficiently elegant for use in the title.

The businesses surveyed are commercial ventures. These are companies having an explicit profit motive and sell a product or service to a customer who may be another business or a consumer. This descriptor is the closest possible term to the currently popular “e-commerce”. The expected short lifespan of this jargonistic phrase, although used in a particular context in this document, renders it unsuitable for use in the title of the study. The focus, quite clearly, is on web-enabled businesses that owe their existence to the internet as an infrastructure, and the web as one application which they use for consumer interaction. Enterprises are those businesses with a shareholder-wealth motive.

The research statement is: *Strategic architecture for commercial web-enabled enterprises contributes to improved performance.*

Null hypothesis:

H₀: Strategic architecture for commercial web-enabled enterprises makes no difference to, or impacts negatively on performance.

Alternative hypothesis:

H_A: Strategic architecture for commercial web-enabled enterprises impacts positively on performance.

Secondary research question:

What are the important elements of strategic architecture for commercial web-enabled enterprises?

1.4 RESEARCH OBJECTIVES

The primary objective of this study is to provide a feasible explanation for the variance in performance of commercial web-enabled firms. In particular, the study investigates by what strategic means e-commerce firms in the networked economy can improve their performance.

In the process of realising the primary objective, several secondary objectives are also identified. These are as follows:

- The development of a conceptual strategic architecture construct based on a literature study;
- The development of a construct of performance based on a literature study;
- The development of an appropriate measuring instrument based on the constructs and suitable for being administered to the strategy formulators, or their equivalents, in commercial, web-enabled businesses in South Africa;
- The description of a possible relationship between strategic architecture and performance;
- The identification of the individual factors contributing to successful performance; and
- The identification of the implications for management.

Since strategy and its application in the networked economy is an emerging academic field, the study should conclude by indicating areas for further research.

1.5 THE SCOPE AND LIMITATIONS OF THE STUDY

The largest group of businesses, measured in terms of annual turnover, would be the category of business to business. However, there are few common characteristics among them which

can readily be identified in order to bound the scope of a study such as this one. The business to consumer group, on the other hand, exhibits several readily-definable common elements such as .co.za domains, the use of shopping trolleys and the use of well-known service providers that host their websites. South African businesses that use electronic commerce for delivering their products or services to consumers, therefore, form the population universe for this study. By definition, the internet is borderless but this study will be geographically confined to South Africa and to those companies established in this country whose main consumer base is predominantly located in this region. Some of these businesses may be the “bricks and clicks” hybrid cases, where selected retailers and purveyors of financial services who have established brands and good reputations have begun using the web as a consumer channel. Other firms included in the survey will be the internet “pure online” businesses.

1.5.1 Limitations

This chosen research field is expanding rapidly and evolving daily as its development mimics the exponential growth of internet-related business. The study will incorporate the latest findings and material from the literature and in practice. The selected period for the literature study is that prior to the first quarter of 2004.

1.5.2 A caveat on population size and expected response rate

Due to the emerging nature of the e-commerce industry, particularly in South Africa, the amount of data from the empirical study is not expected to be very large. The first reason for the expected low response rate is that this study is being initiated at a time when internet businesses, especially the e-commerce ventures, are just beginning to regain investor confidence. As pointed out earlier, the active South African e-commerce industry has never been very large and, due to infrastructural constraints such as bandwidth and a slowly growing online buying population, will take some time to become fully established. The second reason for possible low responses is that many of the ventures are run by sole-proprietors and entrepreneurs still grappling with how to gain competitive advantage and grow their businesses in this new environment and may be cautious about revealing information. Another reason for possible tardy responses may be the fact that owner/managers are likely to be busy people who believe that they would preferably allocate their time to their own businesses rather than participate in a study such as this. Finally, there is also the possibility that the correspondence concerning participation may get lost in spam-mail filters.

The small population coupled with a possible low response rate must raise questions about the *raison d'être*, timing and value of a study such as this.

Managers need assistance, *today*. The internet and the web have created a networked economy that is characterised by immediacy, connectedness and choice. Dynamism and open standards have made new demands on management to perform effectively. The fundamental tenet of this study is that effectual strategy is at the heart of successful performance. How are managers coping in the new environment? Their results so far indicate a less than stellar performance.

There are two research scenarios for offering assistance to management. Both have their trade-offs.

Scenario 1 – Detailed future. In this scenario business managers are allowed to muddle through for the next five years, for instance, until a study such as this one is conducted for the first time. By then the population should be larger and possibly deliver a better response rate. Such a study may produce results that more confidently reflect the population. However, such procrastination in the interest of accuracy may condemn to failure the efforts of today's investors and managers, who are new to the complex environment.

Scenario 2 – Fuzzy present. Dot.com losses of the past should be avoided at all cost. At this point in time, however, a recurrence is not beyond the bounds of impossibility. This study is aimed at empowering managers and, in so doing, preventing such a catastrophe from happening again. Simply studying the reasons behind dot.com failures may not provide sufficient a lesson; the question remains what managers should *do* to be successful. This scenario suggests that the benefits of immediately available guidelines that are grounded in theory, complemented by practice, and sourced from a possibly smaller group of respondents, outweigh the possible inability to confidently extrapolate results to the entire population. In terms of the old adage – an ounce of [fuzzy] prevention [now] is worth a[n exact] pound of cure [in future]. This study opts for this scenario.

The possibility of a low response rate, however, remains a concern that underpins the entire study. Consequently, several actions will be taken to minimise non-response error. The first

action to minimise the potential impact of poor response is to motivate respondents to complete the survey. Each person will be identified and phoned individually. Each will be advised that they will have access to the aggregated responses. All respondents are online – hosting the survey online will minimise the time required to complete the survey. Laggards and non-respondents will be followed up by reminder emails. The questionnaire completion time must be as low as possible without sacrificing resolution.

The main implication of a poor response to this study will be to limit the confidence in the relationships being explored. In the absence of data, however even broad or emerging trends will be of value. Notwithstanding these concerns, for the reasons motivated above, the study will continue, regardless, and address data scarcity problems later.

Care is to be taken when evaluating success or failure as criteria for performance. There are two caveats when studying failures. The lack of antecedent data on failed firms may create a restriction of range problem. Studying only survivors could bias the values for some measures of performance. The second challenge is how to actually measure success against failure. In such cases firms may not be appropriately classified. They may disappear for many reasons but continue to trade successfully. Survival, therefore, is not necessarily evidence of success; it merely remains one consideration.

1.6 METHODOLOGY

1.6.1 Background

Having formulated the objectives and research question and motivated the scope of the study, the specific research methodology to be followed is now discussed.

In general, authors prefer to confine themselves to working within a particular discipline. Thus one would find a study focused, for example, on information technology, strategy or knowledge management. The development of the strategic constructs in this study requires crossing many such functional boundaries emphasising the need for sound theoretical and conceptual domains. The literature study, therefore, should provide the context for, and insights into, the research statement, and permit an in-depth analysis on which effective constructs may be formulated. Specifically, the literature study will involve:

- A study of the relevant journals, books, newspapers, electronic publications, websites, and all other forms of published material;
- The examination of papers presented at conferences;
- Personal communications with local and international experts in the field;
- The use of keyword searches in the full text academic research databases of Emerald, EBSCO Host and ScienceDirect; and
- The application of web search engines such as Google.

The core fields must necessarily include the following:

- Strategy;
- Information technology;
- Information management;
- Information systems;
- Business models;
- E-commerce;
- Knowledge management; and
- Economics.

Further fields of study related to the performance of networked economy businesses may be revealed by cross-references or citations. These will be followed up and examined for their relevance.

1.6.2 The literature study

In simplistic terms the study aims to answer the question: *“If you think (or, by implication, plan) before you do, does it make what you do better – and what are the things you should think about?”* This deceptively simple mantra has challenged generations of managers in traditional businesses. Its relevance in the networked economy underscores the research design of this study.

The literature study will follow a thematic approach. Strategy, with its solid academic foundation and literature base, should provide a logical starting point. The relationship between successful business performance and strategy is well-documented in the literature (Barney, 1991; Chandler, 1969; D'Aveni, 2002; Kaplan & Norton, 1996b; Miles & Snow, 1978; Porter,

1980). The strategy review will begin with the evolution of strategy from its early beginnings of corporate objective accomplishment, through content and process research, industry positioning (Porter, 1985) to the development and application of core competencies (Barney, 1991; Fahy & Hooley, 2002; Hamel & Prahalad, 1990).

The study will describe the prevailing economic context. It will explore characteristics of the networked economy and digital exchanges, which, in turn, should reveal the importance of value creation as a foundational concept. Value creation and business models will form the basis of the next theme. The relative newness of this field confines the study to a consideration of relatively recent academic work completed when the web was either in its infancy or when the dot.com boom was at its peak (Bakos, 1997; Brynjolfsson & Smith, 1999; Lynch & Ariely, 2000). Networks, the predominant driving force in internet-enabled businesses, depend for their success on the effective use of information technology. Some useful concepts, such as alignment, could emerge from a review of related academic studies (Henderson & Venkatraman, 1993; Khandelwal, 2001; Van Der Zee & De Jong, 1999).

The literature study will enable certain propositions to be formulated. It may be shown, for example, that conventional strategy insufficiently explains the variance in performance of businesses in the networked economy. The literature study may call for an explanation that combines the concepts of business models and strategy with a philosophy that takes into account the web and its technologies, and the impact of the internet on economies and markets. Further study of those businesses that have been operating in the networked economy for some time, should shed some light on the need to broaden the base and incorporate contributions from the disciplines of knowledge management, configuration theory and dynamic capability. A research construct, strategic architecture for commercial web-enabled enterprises, will be developed with its concomitant dimensions and items for measurement.

The literature study will conclude with a review of research into business performance. This will form the dependent variable. Relevant material will also be gleaned from empirical studies in the field of entrepreneurial research (Covin & Slevin, 1991; Murphy, Trailer & Hill, 1996; Zott & Amit, 2003) and will lead to the formation of a construct for the performance of commercial web-enabled enterprises, and its dimensions and measures.

Other contentious issues in academia, such as the apparent confusion reigning between some strategy researchers and certain protagonists of business models, will be addressed in the lit-

erature study. Porter (2001), for example, exhorts business leaders to return to fundamentals and abandon thoughts of new business models or e-business strategies which he says encourage managers to view their internet operations in isolation from the rest of the business. Several authorities are at odds with Porter (Downes, 2002; Straub, 2004; Ticoll, 2001). This *contretemps* will be discussed more fully in the text.

1.6.3 Empirical study

Once the constructs have been developed, an appropriate survey instrument will be created. It will strive to describe the relationship between strategic architecture and performance. By means of statistical regression, the linkage between the two constructs will be explored.

1.6.3.1 The survey instrument

The process as described by Churchill (1979) will be followed in this study. Churchill's process is accepted in research (Loubser, 1999). Measurement involves creating rules for assigning numbers to objects in order to represent quantities of attributes (Nunnally, 1978). This requirement implies that the attributes of objects are measured rather than the objects themselves. It does not specify the rules for assigning numbers (Churchill, 1979). By implication, the rigour and skill with which the rules are specified and applied, determine whether the construct has been captured by the measure. Incorporating measures of reliability and validity will ensure good rating scales. Churchill's (1979) procedure for developing better measures begins by researching the domain of the construct. This process delineates what is included and what is excluded in the construct definition.

The next step will be to generate items which capture the domain as specified, expressing each item with a statement describing some aspect of the construct dimension. These items will be tabulated into a questionnaire. The initial data pool provides insights into identifying sufficient items which explain the construct dimensions. The content of the item pool will be validated through expert opinion.

The questionnaire will be administered as a pilot study to a representative sample of the desired universe. Validity will be established by determining the coefficient alpha. A low coefficient indicates that the sample is not a good reflection of the construct; a large alpha indicates better correlation. The measure may then be further purified, if necessary. These steps should produce an internally consistent set of items.

1.6.3.2 Data gathering

The data gathering process will be undertaken using the purified questionnaire. Due to the fact that all respondents are online, it is reasonable to base the questionnaire on the web. This method of data collection has application in the literature (Vehovar, Manfreda & Batagelj, 2001). To facilitate responses and simplify the data-gathering process, the questionnaire, as a Hyper Text Mark-up Language (HTML) document (refer to Chapter 2), is to be hosted on an appropriate website. The respondent records will be added directly to a web-based data-base application once the respondent clicks on a “submit” button. The site will be secured by means of a unique password issued to each potential respondent. Careful programming will ensure that no respondent may make more than one submission or be able to edit their response after submission.

A comprehensive search will be undertaken to identify the population universe. Once this has been completed, in order to get the highest response rate, the person responsible for strategy formulation such as the owner or chief executive officer will be contacted by telephone and invited to participate in the survey.

1.6.3.3 Data analysis

The resulting data will be processed using descriptive statistics. Descriptive statistics provide basic information such as the mean, minimum and maximum values, different measures of variation, as well as data about the shape of the distribution of the variable. Measures of variation include the standard deviation and the standard error.

The application of multiple regression analysis will be used to explore the relationship between the independent, or predictor variable and the dependent, or criterion variable. These models will enable relationships between the predicted performance from the scores of strategic architecture to be graphically evaluated. Advanced data analytical processes will be used, where appropriate, to search for consistent patterns and/or systematic relationships between the variables. These processes will be applied to identify and rank the important elements of the independent variable.

1.6.3.4 Conclusions and recommendations

The results will be presented in written, tabular and graphical form and discussed in terms of their correlation with the literature. The findings, presented in terms of the primary and sec-

ondary objectives, will enable certain conclusions to be made regarding the relationship between strategic architecture and performance of networked economy firms.

1.6.4 Implications

This dissertation will conclude by discussing the implications of the study for management, and presenting recommendations for further research.

1.7 LAYOUT OF THE DISSERTATION

In order to achieve the objectives of the study, the chapters and content of this dissertation are structured as follows:

Chapter 2: The field of information technology is fraught with jargon which is often used incorrectly. This chapter introduces the definition of terms used in the study and clarifies certain concepts.

Chapter 3: In this chapter, building the strategic architecture construct begins by reviewing the roots, components and measures of strategy research. It concludes with the presentation and discussion of the two prevailing strategy perspectives and their relevance in the networked economy.

Chapter 4: Business models characterise networked economy firms. How such concepts result in the creation of value, is the subject of this chapter. The discussion includes an analysis of the networked economy and the features of digital exchanges. The chapter ends with the identification of measurement dimensions contributing to the strategic architecture construct.

Chapter 5: The strategic architecture research construct is further enhanced in order to improve the quality of the measure. The inclusion of the dimensions of knowledge management, harmony and dynamic pliancy complete the construct.

Chapter 6: Performance measurement necessitates development of a second research construct. The literature is studied for dimensions and measures of performance. Traditional financial metrics, supplemented by those created specifically for use in the e-business industry,

incorporating the findings of empirical entrepreneurial studies, are combined into an appropriate construct.

Chapter 7: This chapter describes the first part of the empirical phase of this study. It begins with a description of the instrument to be used to describe strategic architecture. It discusses the operationalisation of both constructs, their content validity and reliability. This chapter motivates the target population universe and develops membership rules for inclusion in the study. It concludes with a description of the pilot study and the empirical data-gathering process.

Chapter 8: In this chapter the empirical data is interpreted in the context of the study. Beginning with an analysis of the demographic variables, the instrument reliability and the empirical results are reviewed. Regression models that explore the relationships between the dimensions and constructs are developed. They are applied to identify and rank the main factors of strategic architecture and probe its relationship with performance. An analysis of variance process examines architectural differences between pure online and hybrid firms. The chapter concludes with a discussion of the findings of the empirical study and comments on the key determinants of success and implications for management.

Chapter 9: This chapter concludes the dissertation. It reviews the study in terms of the research problem, construct development and empirical findings, and ends with recommendations for further study.

1.8 IN SUMMARY

This first chapter introduced the background and context of the study. It discussed the failure of dot.com businesses in the light of their deficient strategies. Poor strategic performance was suggested as a possible contributing factor and motivated as the primary research objective. Secondary objectives include identifying the key strategic factors contributing to successful performance.

Since prerequisites for success may go beyond the strategy and business model concepts, the need to include contributions from knowledge management, business dynamism and harmony

in the literature study was discussed. The research methodology suggested a multi-disciplinary approach to the literature study.

The process leading up to the development of a suitable measuring instrument for surveying South African e-commerce companies was introduced, and the discussion summarised the methodology which is to be employed as the basis for the empirical research. It showed how the study could contribute to the body of knowledge and offered additional spin-offs of possible value to the managers of South African electronic businesses.

The chapter concluded by making a case for studying the B2C channel and touched on the concept of business models. The discussion included a review of current research directions and showed them to be predominantly technology-orientated. As rationality returns to the dot.coms, managers are finding new ways of finding profitability. Through the findings of studies such as this one, they should be better equipped to move confidently into the future.

In practice, information technology and the internet have given rise to jargon. The use of some technical terminology is a necessary part of this dissertation. To prevent misunderstandings, and in the interest of clarity, an explanation and definition of some of the main terms and concepts used later in this document are discussed in the next chapter.

CHAPTER 2

CONCEPTS – INTERNET, WEB AND ELECTRONIC COMMERCE

2.1 INTRODUCTION

In order to differentiate between jargon and scientific meaning, a definitive understanding of the terms used by researchers and quoted in the context of this document is required. There is, for example, a vast difference between internet and world wide web. There are differences between e-business and e-commerce. Such distinctions are clarified in this chapter.

2.2 THE NETWORKED ECONOMY

Since the mid-1990s it has become fashionable to refer to the prevailing business environment as the “new economy”, which essentially reflects the economic pervasiveness of the information and knowledge-based industries, that are facilitated by bandwidth and connectivity resulting from developments in internet technology (Evans & Wurster, 1999). Major features of this economy typically include rapid change, collaboration rather than competition, complexity, uncertainty, technological discontinuity and the need for managing and exploiting knowledge assets. It can be argued that the rules for effective competition in this economy differ from the old manufacturing-based economy and, consequently, a new set of business and management models are required (Fahy & Hooley, 2002). A frequently encountered proposition is that today’s environment appears to differ from the past, and consequently requires new strategies and behaviour for success.

Scheinkman and Woodford, cited in Hax and Wilde (2001b:222), describe the economy as an input-output structure consisting of a large number of layers. Firms which produce the final output are at the top of the pyramid. They source intermediate outputs from the firm in the next layer down. The next firm repeats this process both internally, with other divisions, and externally with other firms. An order for a final product will produce a chain reaction for intermediate and raw materials. Complexity arises because a great many of these simple components interact simultaneously. As the economy grows it adds more components and net-

works, both human and electronic, to connect these components. The complexity lies in the organisation itself – in the myriad of possible ways that the components of the system can interact. Complexity has potential for negative economies of scale. The larger the project, the more likely something could go wrong and amplify beyond control. Prevention requires decentralisation, delegated autonomy with minimal recourse by senior management. Components should not move randomly in any direction. A single sense of purpose with reinforcing strengths needs to be transmitted to the organisation, using the appropriate incentives without losing autonomy. In this context, successful managers must put together the components, both internal and external to the firm, consisting of information, people, capital, and assets, so that they become a self-sustaining and growing business.

There are many economic descriptions in common use. These include “internet”, “electronic” or “on-line” economy and “virtual economy”. These creations have a common failing – in every case they are tacitly associated with computer systems. Their meaning erroneously elevates the unmerited role of technology to that of a fundamental driving force in the economy. History has proven that it is political ideology that changes economies. The internet is simply an infrastructure with technology as an enabling force. When the telephone was invented it revolutionised communications and created new and faster ways for business interaction (Cohen, 2002; Schumpeter, 1934). It did not permanently redefine the economy or change economic principles. What it did do was to improve the speed and efficiencies within which constituents of the economy disseminated information and conducted transactions. The internet and its related applications have similarly generated efficiencies arising from connectedness of vendors, retailers, customers, competitors and government. The apparent differentiating factor, arising from the pervasive nature of the internet and its standards, has joined players in the economy in an unprecedented way. The economy has become networked. The descriptor “networked economy” is therefore used in the remainder of this document.

2.3 THE INTERNET

The internet is a decentralised global network connecting millions of computers permitting exchanges of data, news and opinions. Each internet computer is independent and its operators can choose which services to use and which local services to make available to the global community. The internet is accessed in a variety of ways with the most popular consumer

connection being the dial-up service offered by commercial internet service providers (ISPs), represented in South Africa by businesses such as MWeb and Tiscali.

The internet started in 1969 as the ARPAnet. Funded by the United States government, the network became a series of high-speed links between major supercomputer sites and educational and research institutions, mostly in the United States. The network was designed to function as a whole should parts of it collapse, as in the event of a nuclear explosion.

The network infrastructure is built on standards for interconnection (Eisenmann, 2002; Fellenstein & Wood, 2000; Leiner, Cerf, Clark, Kahn, Kleinrock, Lynch, Postel, Roberts & Wolff, 1997; Zakon, 2002). The transmission communications protocol (TCP), combined with the internet protocol (IP) to form TCP/IP, is one such standard. This approach has made connection to the internet device-independent. This means that any device, computer or operating system using these protocols may access any of the internet services.

One of these protocols for the exchange of information is the world wide web with its hypertext transfer protocol (HTTP). Similar protocols include Point of Presence 3 (POP3) and Small Mail Transport Protocol (SMTP) used for email, File Transfer Protocol (FTP) for file transfers and Internet Relay Chat (IRC) for online interaction. The world wide web is just one of the services offered on the internet which provides a simple user interface through which it is accessed. These services include content, products and services that can be viewed or ordered through a web browser (Amor, 1999).

By the mid-1990s, prompted by the invention of the browser, many systems, including those of corporate local area networks (LANs), joined the internet. Its primary function changed from education and research, to the provision of commercial services. In 1995 it was turned over to international commercial ISPs, such as MCI, Sprint and UUNET in South Africa, which took responsibility for the backbone infrastructure. Its capacity and bandwidth has been enhanced ever since. Regional ISPs now link into these backbones to provide lines for their subscribers. Smaller ISPs hook either directly into the national backbones or into the regional ISPs.

In July 2001 there were in excess of 125 million hosts on the internet. Today (2004) the number of hosts is close to 250 million (Internet Software Consortium, 2004). A host is a

high-end server always connected online via the TCP/IP protocol. The internet is also connected to non-TCP/IP networks worldwide through gateways that convert TCP/IP into other protocols.

Most users interact with the internet via web browser programs which integrate file transfer services, news, email, discussion groups and document exchange. The original academic and scientific users of the internet are developing their own network once again as internet2 under the auspices of the World Wide Web Consortium. Since it will be some time before this system is broadly available in the United States, let alone in South Africa, it has no bearing on this study. The internet, however, is not synonymous with the world wide web.

2.4 WORLD WIDE WEB

The world wide web (WWW, or “the web”) was invented at the European Centre for Nuclear Research (CERN) in Geneva by Tim Berners-Lee in 1989 (Berners-Lee & Fischetti, 2000). It was originally created as a collaboration tool to share research information on nuclear physics. In 1991, the first browser was introduced, and by the start of 1993 there were 50 web servers. By 1994, there were approximately 500 websites, and, by the start of 1995, nearly 10,000. At the end of 2003 the worldwide internet user population was reported to be between 446 and 533 million (Cyber-Atlas, 2003). Projections for 2004 range between 709 and 945 million. In South Africa, statistics on internet-use vary widely. As reported before, the local internet population is less than 2 million. Others differ - in a December 2003 report, for example, Goldstuck expects the internet population to exceed three million within the next 12 months (Goldstuck, 2004a).

The world wide web is a system of internet servers that support documents formatted in a plain text script, hypertext mark-up language, that also supports links to other documents, as well as graphics, audio and video files. Clicking a mouse on a link enables the reader of one document to jump to another. Such documents are linked locally and remotely, and are located on the internet on web servers that store and disseminate web pages. Web pages are accessed by browser software called a “web browser,” the two most popular being Microsoft’s Internet Explorer and Netscape Navigator. The web browser provides an easy point and click interface enabling access to the largest collection of online information in the world. Since the

web became the focal point of the internet, the amount of information has increased exponentially.

Web services, such as databases, payment systems, customer management systems, and online order forms, facilitate online shopping and e-commerce. Many organisations have added electronic capabilities to their offerings. Businesses that interact electronically via the internet with their customers are the subject of this study.

The fundamental web format is a text document embedded with HTML tags that control the formatting of the page as well as the hypertext links (URLs) to other pages (Berners-Lee & Fischetti, 2000). The web has spawned intranets which are in-house, private web networks for the restricted use of corporate employees. This corporate network is protected from the internet by means of a firewall that lets intranet users out to the internet, but prevents unauthorised internet users from coming in. HTML, the abbreviation for hypertext mark-up language, is the authoring language used to create documents on the world wide web. It defines the structure and layout of a web document by using a variety of tags and attributes (Kristula, 1997). Extensible mark-up language (XML) is an open standard, developed and controlled by the World Wide Web Consortium for describing and defining data elements on a web page, and in business-to-business documents. This language and its dictionaries provide standards for B2B networking connectivity that form the basis for future interaction.

A network is a group of two or more computer systems linked together. There are many types of computer networks, including local-area networks (LANs) where computers are geographically close together, and wide-area networks (WANs) where the computers are further apart and are connected by optical fibre, cables, telephone lines or radio waves. The protocol defines a common set of rules and signals that computers on a network use to communicate. It is an agreed-upon format for transmitting data between two devices (Amor, 1999). Communications protocol is a special case of protocol governing data transmission between computers, and defines the packet structure of the data transmitted or the control commands that manage the session, or both. Transmission control protocol/internet protocol (TCP/IP) has become the worldwide standard for internet communications (Webopedia, 2002). Networks can be broadly classified as either having a peer-to-peer or client/server architecture.

Architecture in information technology (IT) terminology refers to a design. It is the fundamental foundation on which any business or enterprise computer system is built. It comprises several conceptual or technological layers, each of which generally contains functions of greater complexity, each of which has a higher value to the firm. It may include hardware, software or processes, or a combination. Due to its fundamental, over-arching nature, architecture is closely associated with system effectiveness and performance. In a system prone to security breaches, server breakdown or communications malfunction, inadequate attention to architecture may be a root cause of the problem. Conversely, a well-performing, integrated, information technology system may be described as having “a good architecture”. The concept of architecture is later applied to the strategic business domain and extended to form one of the research constructs in this study.

2.5 INTERNET AND THE WORLD WIDE WEB

Occasionally, the terms internet and web are interchanged incorrectly in the same context. The two terms are not synonymous. The internet and the web are two separate but related things. The internet is a network of networks, including its entire associated infrastructure. It connects millions of computers globally, forming a network in which any computer can communicate with any other computer as long as they are both connected to the internet using its protocol. The web is a way of accessing information over the medium of the internet. It is an information access and sharing model that is built on top of the internet. The web is simply one of the ways that information can be disseminated over the internet. The internet, not the web, is also used for e-mail, which relies on SMTP, news groups, instant messaging and FTP (Amor, 1999; Webopedia, 2002). The web uses a browser to access a broad range of digital services.

Transaction and company data were the first types of information digitised, followed by word processing, music and finally video. Having all forms of information in the digital domain has given rise to numerous convergence opportunities, which have been innovatively exploited by electronic commerce businesses. Data and voice have converged. Billions of dollars have been invested by private enterprises and telecom carriers to develop the voice-over-internet protocol (VoIP) networks, using the internet's IP protocol enabling voice to travel over the same packet network as data. As demand for services has increased, so has the need for larger infrastructural capacity, notably, bandwidth.

Bandwidth is the transmission capacity of an electronic line such as a communications network or computer bus. It is most commonly expressed in bits per second or bytes per second. It is presently a scarce and expensive resource and viewed, particularly in South Africa, as the single largest handicap to electronic commerce growth. Similar situations prevail in other countries that do not have competing telecommunications infrastructure providers. Lack of bandwidth is hindering business electronic connectivity.

2.6 ELECTRONIC BUSINESS (E-BUSINESS) AND COMMERCE

E-business refers to doing business online. IBM are credited by first using the term (Chaffey, 2002:7). Their definition is “the transformation of key business processes through the use of internet technologies.” Business processes may be very comprehensive and assist with more than just selling products and services. For example, they may support research and development, marketing, manufacturing and inbound and outbound logistics. Amit and Zott (2001:500) define an e-business firm as one that derives a significant portion of its revenues from transactions concluded over the internet. Such ventures include ISPs and business communities, centralised procurement portals, supply-chains, government departments, auctions – and the population that serves as the subject of this study – electronic commerce ventures.

E-commerce is a particular subset of e-businesses. The term applies in a general sense to those businesses conducting commerce between buyers and sellers online, using the web and its technologies. E-commerce and e-business are not synonymous. E-commerce applies to the sale and purchasing of goods and services online, whereas e-business might be used as more of an umbrella term referring to many more internet-related business processes, such as recruitment, procurement, communications, transactions, financial services, collaboration or business management. A specific process within such an enterprise could be e-commerce.

Fellenstein and Wood (2000) refer to e-commerce as a set of electronic, networked transactions, including those pre-transaction and post-transaction activities performed by buyers and sellers. E-commerce makes use of software applications that link multiple enterprises and consumers for the purpose of conducting electronic commerce. The environment requires one or more technologies to safely complete a specific business transaction. These technologies

include security, data encryption, electronic invoicing and payment processes. They also require merchandising, electronic mall, catalogues and other relevant media. E-commerce practices are not necessarily confined to the internet, and may include intranets, extranets, private networks and other networking facilities that enable buyers to communicate with sellers, or partners with other partners.

The following authors typify the definitions encountered in the literature. Rayport and Jaworski (2001) define e-commerce as technology-mediated exchanges between parties, which may be individuals, organisations or both, as well as the electronically based intra- or inter-organisational activities that facilitate such exchanges. Kalakota and Whinston (1997) define e-commerce from four different perspectives:

- Communications perspective – the delivery of information, products/services, or payments via telephone lines, computer networks, or any other means;
- Business process perspective – the application of technology toward the automation of business transactions and workflow;
- Service perspective – a tool that addresses the desire of firms, consumers, and management to cut service costs, while improving the quality of goods and increasing the speed of service delivery; and
- Online perspective – e-commerce provides the capability of buying and selling products and information on the internet and other online services.

Zwass (1996:1) summarises the above and posits e-commerce as “the sharing of business information, maintaining business relationships, and conducting business transactions by means of telecommunications networks.” E-commerce is not e-business.

e-Business is any process that a business conducts over a computer-mediated network. Business organisations include any for-profit, governmental, or non-profit entities. On the other hand, **e-commerce** is any transaction completed over a computer-mediated network that involves the transfer of value, ownership or rights to use goods or services. Transactions occur within selected e-business processes, and are deemed completed when agreement is reached between the buyer and seller to transfer the ownership or rights to use goods or services. Completed transactions may have a zero price, as in the case of a free software download

(Mesenbourg, 2000). There are three ways of depicting the e-business/e-commerce relationship as shown in Figure 2.1.

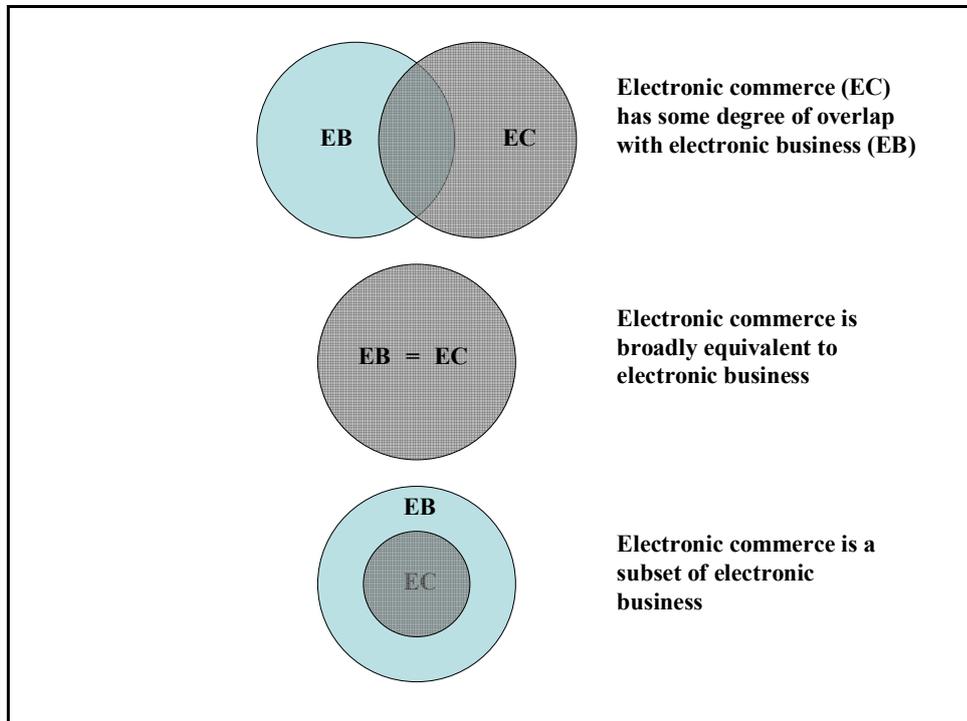


Figure 2.1: Alternative forms of the e-business: e-commerce relationship

Source: Chaffey, 2002:8

Most of the smaller firms in the study population are a subset of the electronic business universe. This perspective is used throughout this document.

2.7 IN SUMMARY

This chapter introduced concepts referred to later in the dissertation – some of the key definitions related to the internet, the web, e-business and e-commerce, their origins and the differences between them. The development of the first construct begins in the next chapter, which documents the findings of the literature study into corporate and business strategy and its application in the networked economy.

CHAPTER 3

DIMENSIONS AND MEASURES OF STRATEGY

3.1 INTRODUCTION

The first chapter discussed a tenet of the study – that effective strategy might prevent further rounds of dot.com losses. It also motivated why the literature study should begin with strategy. This chapter therefore begins with the academic roots of strategy, and ends with its applicability, relevance and role for firms in the networked economy.

Corporate strategy, the process applicable to the enterprise as a whole, is the one by which a firm creates and sustains its competitive advantage (Thompson & Strickland, 2001). It is the essence of how any endeavour, whether profit-seeking or otherwise, establishes, sustains, grows and eventually, having made its economic contribution to stakeholders, exits its domain of activity. Regardless of whether the prevailing economic paradigm is agrarian, industrial, information- or knowledge-based, corporate strategy remains that pattern of decisions defining the firm's products and markets, objectives, plans and range of business. It frames the economic, human, capital and technological organisation, and drives the creation of a return to all constituents. Strategy is the beginning of effective performance.

This chapter explores the conceptual roots of strategy and incorporates these into developing the architecture construct. The advent of the internet introduced new rules for competitive behaviour. “[The economy] has been transformed by digital technology in the post-industrial period. Value creation for consumers has shifted from physical goods to an economy that favours service, information and intelligence as the primary sources of value creation” (Rayport & Jaworski, 2001:2). These sentiments are echoed by many researchers (Eisenmann, 2002; Fjeldstad & Haanaes, 2001:2; Hamel & Prahalad, 1996a), authorities such as Hamel (2000) and Thurow (cited by Hax and Wilde 2001b:1-4), and journals (The Economist, 2000).

In the process of identifying the relevant dimensions of strategy, this chapter begins with the evolution of strategy measurement. It finds three approaches advocated in the literature (Venkatraman, 1989) and motivates the application of a comparative approach. The taxon-

omy-oriented research stream is reviewed, together with one older typology, that of Miles and Snow (1978) and the more modern, but pre-internet approach of Whittington (1993). The literature is reviewed for studies providing empirical support for the taxonomic approach.

The two predominant views on strategy are examined, namely the resource-based view, which focuses on the internal capabilities of the firm (Barney, 1991; Madhok, 2002; Priem & Butler, 2001; Rouse & Daellenbach, 2002; Schroeder, Bates & Junttila, 2002; Srivastava, Fahey & Christensen, 2001) and the positioning-based view with its industry construct perspective (Dess & Davis, 1982; 1984; Hax & Wilde, 2001a; Miller, 1988; Miller & Friesen, 1986; Porter, 1980, 1985). The relevance of these approaches and the applicability of the strategies they advocate for the networked economy, include a literature-based analysis of their limitations.

Since it cannot be stated definitively that the new business environment represents a totally different, discontinuous change from the old, or whether the old and new environments will share many features and competitive imperatives, the study continues by reviewing the different approaches. Porter (1980), for example, suggests that the strategies of cost leadership and differentiation are contradictory. There are challenges to Porter's claims about the exclusivity of cost leadership and differentiation (Kim, Nam & Stimpert, 2001). Turbulent and rapidly changing competitive environments may require more flexibility and the ability to mix more than one generic strategy.

The chapter concludes by discussing the debate amongst researchers concerning the role of the firm in a networked economy. Conflicting empirical studies support the view postulated in this study, that for effective competitive advantage a different, more fundamental business philosophy is needed – one built upon the elements of corporate strategy considered relevant to the networked economy, with added dimensions sourced from the characteristics of electronic markets, the networked economy and the production of knowledge and information products.

3.2 CORPORATE- AND BUSINESS-LEVEL STRATEGY

Strategy is the game plan of management. It defines the firm's market position and how it conducts its operations, attracts and satisfies customers, competes successfully and achieves organisational objectives. It is the way a firm attains its desired future. Strategy reflects the sum of managerial choices and is a blend of deliberate actions, tactical response and organisational learning. Effective implementation demands that management build a strategy-focused organisation, allocate resources, establish policies, motivate and reward people, install systems and apply leadership (Thompson & Strickland, 2001:3,19).

In diversified organisations strategy exists at four distinct levels: corporate (the company and its businesses, taken as a whole), business (a strategy for the different company businesses), functional (for the functional unit within every business) and operational (departments that exist within the functional areas). In a single-business company there may be three levels of strategy formulation: business, functional and operating strategies. For them, corporate strategy and business strategy "are one and the same" (Thompson & Strickland, 2001:49,50,55).

Corporate strategy is the basis for establishing business positions in different industries and the approaches to managing a group of businesses. Corporate strategy includes diversification, leveraging the performance of business units, the quest for corporate competitive advantage and the application of corporate resources. Andrews (1980) views corporate strategy as the decision set that determines and reveals its objectives, purposes, or goals; produces the principal policies, and plans for achieving those goals. It also defines the range of business the company is to pursue; the kind of economic and human organisation it is or intends to be; and the nature of the economic and non-economic contribution it intends to make to its shareholders, employees, customers, and communities. The function of corporate strategy is to define the way in which a firm will compete, deploy its resources and convert distinctive competence into competitive advantage. It is effective over long periods of time, affects the company in many different ways, and focuses and commits a significant portion of its resources to the expected outcomes (Andrews, 1980). As in a family unit, some authors suggest that corporate strategy contains elements of "parenting" (Goold & Campbell, 2002:219).

Business level strategy is the strategy of a single business which may or may not be part of a larger corporation. Its domain includes creating competitive advantage, responding to macro-

environmental developments, forming alliances and defining the business scope. Within each business, various functional strategies such as marketing, human resource, manufacturing and supply-chain management exist. “The central thrust of business strategy is how to build and strengthen the company’s long-term position in the market place” (Thompson & Strickland, 2001:54-55). Business strategy defines the choice of product or service and market of individual businesses within the firm. It defines how a company will compete in a given business.

Business strategy is not the business model. Thompson and Strickland (2001:4-5) view a business model as being more narrowly focused than a company’s business strategy. According to their definition, the business model defines how a particular venture achieves monetary success. It is concerned with revenue, costs and profit contribution. They differentiate by viewing strategy as a process emphasising a company’s competitive initiatives and business approaches. Business models, in contrast, deal with whether the revenues and costs flowing from the strategy demonstrate viability. A possible limitation in their definition of the business model is the omission of customer-centricity and the concomitant value proposition, which presumably is to be found in the realm of strategy. These writers judge business model effectiveness on whether the firm has been in business for a while and whether it is making acceptable profits. (The exploration of business models begins in the next chapter).

Should there be a need to differentiate between the levels of strategy in this document, the word will be prefixed by “corporate” or “business”, as appropriate. Since this study operationalises strategy measurement at the business level, where there is no prefix the term “strategy” refers to the business level strategy as defined above.

3.3 STRATEGY MEASUREMENT AND ITS APPLICATION TO THIS STUDY

Three approaches to strategy measurement are encountered in the literature (Venkatraman, 1989:943): the narrative, the classificatory and the comparative. Each perspective is discussed in order to motivate the approach selected for use in this study. Examples of a fourth approach, longitudinal studies, are also found in the strategy literature. This type of research design has been applied to the study of market and strategic orientation (Noble, Sinha & Kumar, 2002), the long-term impact of strategies on performance (Balogun & Johnson, 2002) and trends in customer loyalty (Verona & Prandelli, 2002). For the results of such work to be meaningful, however, data must be gathered over long periods of time. The internet and the networked economy are relatively recent phenomena, and the associated business environ-

ment still remains turbulent. Although such information would be desirable (Fahey & Christensen, 1986:177), for these reasons a longitudinal approach would not be suitable for this study.

3.3.1 The narrative or interpretative approach

The narrative approach to strategy measurement, maintains Hempel (1952), reflects the case study based tradition of business policy based on the view that strategy should only be described in its holistic and contextual form (Venkatraman, 1989:943). The distinctiveness of the strategy concept lies in its uniqueness in a particular setting (Andrews, 1980) which implies that strategy is best described verbally, and that abstractions are best captured in narrative descriptions in preference to measuring schemes. This approach, often applying hermeneutic, interpretative principles (Corbitt, 2000) has a role in conceptual developments and behavioural studies, but has limited application in testing theories on the effectiveness of various strategies under complex environmental conditions. For this reason it is considered unsuitable for this study.

3.3.2 The classificatory approach

The movement beyond the narrative approach to strategy began with the development of classifications or typologies. Prominent ones include Rumelt (1974), Miles and Snow (1978), Schendel and Hofer (1979), Porter (1980), and Whittington (1993) in his rhetorical question: what is strategy – and does it matter. Venkatraman urges caution in applying this approach since typologies can be “rooted in a set of parsimonious classificatory dimensions or conceptual criteria” (Venkatraman, 1989:943). Some approaches are conceptual but they reflect the problem as “... easy to find a single dimension on which a typology can be based and which will support any given philosophical orientation” (Venkatraman, 1989:943). Empirical taxonomies include the work of Miller and Friesen (1978) into archetypes of strategy formulation and Galbraith and Schendel’s (1983) empirical analysis of strategy types, both of which confirm the existence of internally consistent configurations. Their development is sensitive, however, to the choice of underlying dimensions, as well as the analytical method used to extract the taxonomies (Hambrick, 1984).

Typologies may be conceptually robust but can be imprecise, maintain Fahey and Christensen (1986:175) in their research into strategy content. There is always the danger of

over-simplifying reality and producing a typology which fits the study without reflecting the required differences along the underlying dimensions. This caveat is duly noted in the context of this study.

3.3.3 The comparative approach

The comparative approach⁴ endeavours to break down variations across different strategy classifications into more detailed differences along underlying dimensions. The dimensions should have theoretical content as well as adequate operational measures. Given that “all theories in science concern statements mainly about constructs rather than about specific, observable variables” (Nunnally, 1978:96), the process of construct development and measurement is at the core of theory construction. Such constructions must include tests for unidimensionality, reliability, convergent, discriminant and predictive validity (Venkatraman & Grant, 1986).

This study aims to identify and measure the key dimensions of a construct, relating competitive behaviour to performance in the networked economy. The approach advocated is a comparative one, which focuses less on categorisation of a typology, less on interpreting behaviour, and more on measuring differences along a set of characteristics that collectively describe the strategy construct. This approach has not only been deployed in earlier work on strategy as found in the literature (Dess & Davis, 1984; Hambrick, 1983; Miller & Friesen, 1984), but also in studies of a more recent nature (Ragu-Nathan, *et al.*, 2001; Rho, Park & Yu, 2001).

This comparative approach aims to link the conceptual definition and empirical indicators of a single architecture construct (strategic architecture for commercial web-enabled enterprises), to performance. Specifically, the objective is to arrive at a set of operational indicators for important dimensions of this construct that meet minimal criteria of measurement. The second construct, business performance, is developed along similar lines. The relationship between the two is then measured by applying regression techniques.

⁴ “Comparative approach” has been used in management research for other reasons, but here its application is confined to the use of scales for measuring concepts, as opposed to the classificatory approach that seeks to measure the presence or absence of a phenomenon (Venkatraman, 1989).

3.4 PRE-1980 HISTORY OF STRATEGY MEASUREMENT

Strategy has a rich heritage, providing insights of substantive value to the architect of competitive advantage. Tracing its evolution leads to a better understanding of strategy formulation in a prevailing economic environment.

3.4.1 The chronological evolution of strategy

The earlier authors of strategy in a corporate environment were Sloan and Drucker. Sloan's work with General Motors was undertaken in 1921 but only published later (Sloan, 1963). Drucker studied several US corporations in the 1940s and concluded that the most successful companies were those that were centralised and excelled at goal-setting (Drucker, 1946). Strategy began to be viewed from a different, broader perspective with the publication by Levitt in the Harvard Business Review of an article entitled "Marketing myopia" (1960), in which he maintained a focused vision produced the best result. The formalised and academic measurement of strategy and strategic thinking, however, is rooted in the work of Chandler (1962). As one of the first writers on corporate diversification, his definition of strategy is the process of "setting of long-term goals and objectives, the determination of courses of action and the allocation of resources to achieve those objectives" (Chandler, 1969). It was Chandler who coined the phrase "strategy before structure". In the mid-1960s a blueprint for planning a firm's objectives, expansion plan, product-market positions and resource allocation was advocated by Ansoff (1968). Neither Ansoff nor Sloan claimed credit for developing the first concept of strategy. Ansoff, and others, acknowledge the contributions of military practice (Whittington, 1993:14).

The first attempt to quantify the specific relationship between strategy and performance came from the Boston Consulting Group, founded in 1964 (Henderson, 1989). A blend of market analysis and research with financial theory resulted in the quantification of performance and the development of an extensive database.

In the mid-1970s the perspective of strategy research shifted towards strategic management and theories on organisational behaviour, economics, finance and marketing (Schendel & Hofer, 1979), which eventually gave rise to strategy content research. The major thrust of this research explored linkages among environmental conditions, corporate or business-unit stra-

tegic decisions and economic performance. To this point, strategy research did not generally differentiate between its content and process.

3.4.2 Strategy content and process

The concepts of strategy content and process are often used collectively. Content focuses on the specifics of what was decided. The content of strategy refers to the choices, plans and actions which make up the strategy. Strategy process addresses how organisations reach such decisions. It is the act of creating strategy, its analysis, organisation and implementation.

There are two schools of thought with regard to the process of strategy formulation: the normative and the process approaches (Weir, Kochhar, LeBeau & Edgeley, 2000). Normative models of strategy implementation are concerned mainly with structured steps of activities, which determine the content of the strategy. A study by Piercy (1990), of marketing concepts and actions resulting in marketing-led strategic change, finds that these models rely on rational decision making that is characterised by discrete decision areas defined by formalised frameworks, using information collected and analysed through a set of accepted scientific techniques. These studies are surrounded by complexity. In an empirical study of the alignment between manufacturing and marketing strategies, the author, Weir (2000:834) cites Penning who suggests that “advocates of the process perspectives of strategic decision-making depict strategic decisions as messy, disorderly and disjointed processes around which competing factions contend”.

Strategy content research examines the content of decisions regarding the goals, scope and/or competitive strategies of corporations. Goal content research may focus on survival, economic performance, social conduct and other fundamental positions to which resources have been committed. Scope content research may include issues regarding diversification, vertical integration, geographic expansion, strategic alliances, internal growth, acquisitions and divestments. Competitive strategy content focuses on strategic groups and industry segmentation, determinants of business-unit performance, taxonomies of strategy types, stages of industry evolution, and signalling and competitive response. Competitive strategy research has focused on those strategy elements which are reflected in income statement resource allocations.

3.5 STRATEGIC GROUPS: STRATEGY AND PERFORMANCE

Strategic management researchers have employed the concept of strategic groups as a means of studying the linkages between competitive behaviour and performance (Fahey & Christensen, 1986). Strategic group research focuses on whether firms within an industry could be sub-divided into groups following similar strategies, and whether member differences are systematically related to differences in profitability.

Hergert, cited by Fahey and Christensen (1986), used cluster analysis to observe strategic groups in a majority of markets. His study identified four factors (buyer diversity, product complexity, life-cycle stage, and relative size of managerial input) which influence the number of strategic groups in an industry. His results, however, were ambiguous when attempting to relate strategic group structure to rivalry and performance. The contribution of the strategic group perspective is useful as it appropriately recognises important external forces operating in all or part of an industry, without adopting the overly deterministic view of corporate performance, which has, at least until recently, characterised much of industrial organisation economics (Fahey & Christensen, 1986).

3.6 THE LINK BETWEEN MARKET SHARE AND PERFORMANCE

Companies doing business on the internet find, in much the same way as traditional businesses, that their performance is influenced by market share. In the literature there are studies endeavouring to connect market share and performance (Fahey & Christensen, 1986). Market share is one of the best known of all hypothesised determinants of profitability. Research into the association between the two variables was published in the early 1970s (Buzzell, Gale & Sultan, 1975; Gale, 1972). Some of the results are unexpected, as for example the frequently asserted trade-off between market share and profitability is not necessarily an empirical reality. In another study into strategic attributes and performance of industrial product businesses (Hambrick, MacMillan & Day, 1982) the authors found that only among Boston Consulting Group “star” businesses was there an inverse relationship between market share change and any measures of financial performance. A later study into contextual and strategic differences among mature businesses in different dynamic performance situations (Zeithaml & Fry, 1984)

the researchers identified circumstances under which market share and profitability increases occur simultaneously in mature businesses.

While this research stream has expanded knowledge and understanding of the market share-profitability relationship, it has also raised several problematic issues common to strategy content studies. It is stated, for example, by Fahey and Christensen (1986:174) that “the research does not establish causality, the studies do not clarify how market share gains are achieved and how these gains get reflected in various measures of profitability, and believe that this research stream is one step removed from the intentions of the firms (with) realised strategy ... substituted for intended strategy”.

3.7 STRATEGY AND PERFORMANCE – A TAXONOMIC APPROACH

Later in this study a taxonomic approach is employed in the exploration of business models. There are studies in the literature on the taxonomy of strategy. Strategic management researchers have focused increasing attention on the concepts of taxonomies frequently referred to as *gestalts*, strategic archetypes or generic strategies, find Robinson and Pearce (1988) in their work on patterns of strategic behaviour and the relationship to business-unit performance. These behavioural efforts aim to provide an empirical mechanism through which different strategies or patterns of strategic behaviour can be classified across a variety of industries (Kim, *et al.*, 2001).

The taxonomy-oriented research stream is a movement toward the empirical testing of conceptual typologies and strategy types. It has long been promulgated by strategy scholars as a means to the identification of interrelated strategy components, recognising that competitive strategies represent a network of interactions among the various constituent elements that ultimately make up a business strategy. This is the view of Galbraith and Schendel (1983) in their empirical analysis of strategy types. A well-researched typology is that of Miles and Snow (1978) on organisational strategy, structure and process. Aspects of the work of these researchers are applied when the strategy-related dimensions of this study are developed.

3.7.1 Patterns of strategic behaviour

In their strategic concept Miles and Snow (1978) postulate that managers develop patterns of strategic behaviour that actively link the internal organisational entrepreneurial, engineering

and administrative domains with their perception of the external environment. The researchers classify such patterns into prospectors, defenders, analysers and reactors. The relationship between the external environment and its impact on the selection of the most appropriate strategy appears to be a somewhat contentious issue, maintains Hambrick (1983). In his work on high profit strategies in mature capital goods industries, confusion seems to emanate from the Miles and Snow observation that any one of the three more stable archetypal styles are equally likely to perform well in any industry. This contention is evaluated within a broader context by Oosthuizen (2000) who, in his paper questioning the value of a new paradigm in developing strategy, attributes confusion to the use of the word “industry”. This term could imply different external conditions to different organisations. It would thus not be unrealistic to expect that, given different environmental niches and resultant strategies, different levels of output may be achieved.

In another study into strategy and performance (Snow & Hrebiniak, 1980), the authors showed that defenders, prospectors and analysers consistently outperform reactors in competitive environments, but not in an environment that is highly regulated. In his contingency study, Hambrick (1983) found statistically significant differences in the performance (profitability, cash-flow and market share) of prospectors and defenders as they relate to external characteristics such as the stage in the life-cycle (growth versus mature) and the presence of innovative or non-innovative orientations. Venkatraman (1989:948) adds aggressiveness to the innovation dimension. This dimension then refers to the “posture adopted by a business in its allocation of resources for improving market positions at a relatively faster rate than the competitors in its chosen market.” The items include product innovations and/or market development, improving relative market share and competitive position. A summary of the Miles and Snow typologies and related strategy variables is given in Table 3.1.

Table 3.1: Typologies and their strategies

Typology	Associated strategies
Prospectors	Market or product development Low cost or differentiation Latest technology focus High quality or high service
Defenders	Market penetration Low cost Differentiation Niche
Analysers	Market or product development Penetration Focus
Reactors	None ⁵

Source: Slater & Narver, 1993:35

Miles and Snow argued that three strategies could result in similar performance, that is prospectors, defenders and analysers. The reactors were thought to be relatively invisible to researchers. Other academics such as Zahara and Pearce (1990), in their work into evidence on the Miles-Snow typology, argue that results are mixed. In a particular industry it has been found (Snow & Hrebieniak, 1980) that reactors out-performed other typologies. In a more recent work (Teach & Schwartz, 2000:33), the researchers studied strategies and performance over time. In this work they cite Stimpert and Duhaime who posit that “...success can be achieved in many ways and through the pursuit of many different strategies, perhaps negating the Miles and Snow observations related to stable typologies...”. These issues suggest caution when taking into consideration the findings of taxonomic studies, since there is a danger, when reducing the complex realities of management performance in the prevailing business environment to a few types, that the process may deliver unduly simplistic results.

⁵ The researchers consider the Reactor-type as not having been consistently described for a definitive associated strategy. Literature sources indicate that it could be considered a “residual strategy” (Slater & Narver, 1993:34).

3.7.2 Outcomes and the processes of strategy

In analysing the various approaches to strategy, Whittington develops a model (Whittington, 1993:2-9) in which the four main streams of strategy development are classified into two dimensions: the outcomes of strategy and the processes by which it is made. He posits that the four main themes of strategy research are:

- Classical – the oldest and still most dominant approach which relies on the rational planning methods widely practised today;
- Evolutionary (as used in the Darwinian rather than chronological context) – an approach that draws on the metaphor of biological evolution, but substitutes the discipline of the market for the law of the jungle. These protagonists assume the environment to be too unpredictable and implacable to anticipate effectively;
- Processualists – acknowledging the nature of human life and match strategy to the “fallible processes of both organisations and markets.” This is the political view on the process of strategy; and
- Systemic strategists – linking the inputs and outputs of the strategy process to the cultures and powers of the social system in which it takes place. It will be shown later that business models have evolved from this latter group.

Approaches to strategy classification differ along the two continua of strategy outcomes and the processes applied. Whittington maintains that each approach has a different answer to the question “what is strategy?” and “does it matter?”. Ansoff (1968) and other classical strategists (Porter, 1980) view strategy as a rational process of deliberate calculation and analysis, designed to maximise the long-term competitive advantage of the firm. They see the gathering of information and the application of appropriate techniques making the business and its environment predictable, shaped by careful planning. These classicists see planning leading to the mastery of the internal and external environments. Strategy issues in the rational analysis and objective decisions of managers make the difference between long-term success and business failure.

Figure 3.1 has a vertical axis that measures the degree to which strategy either produces profit-maximising outcomes or deviates to allow other possibilities to intrude. The x-axis considers the processes, reflecting to which extent strategies are the product of deliberate calculation or whether they emerge by “accident, muddle or inertia.”

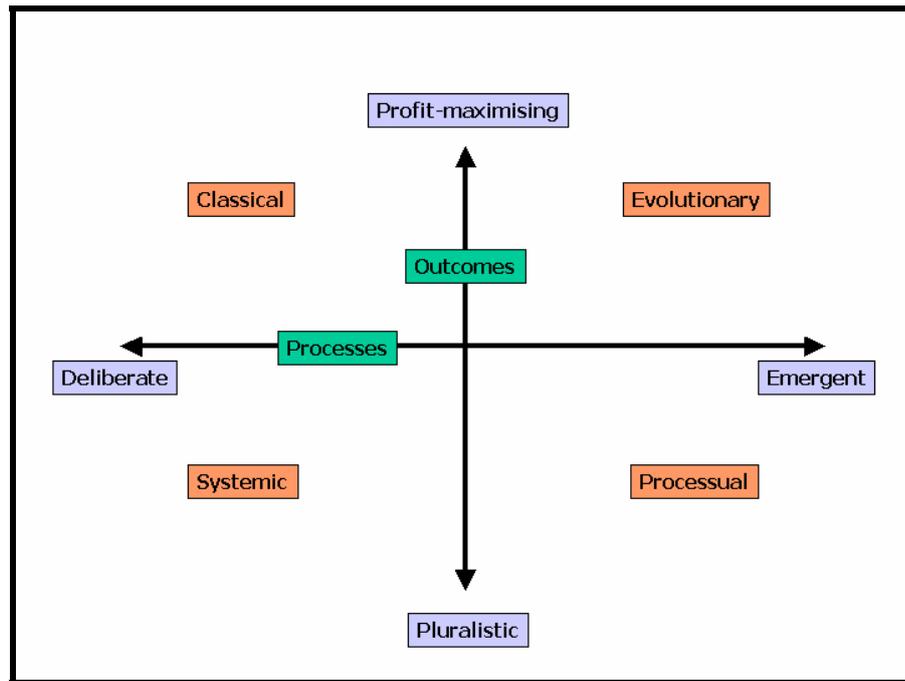


Figure 3.1: Classification of strategy development

Source: Whittington, 1993:3

It is evident that the classical and evolutionary approaches have profit maximisation as the ultimate performance goal of strategy while systemic and processual approaches are more pluralistic in the allowance of other possibilities. It will be shown later in this study that business models follow a deliberate process with multiple outcomes. They presently appear to follow a “systemic” approach; first indications of classicist overtones are also becoming manifest.

The concept of business models has arisen as researchers sought to understand the behaviour of commercial internet-based businesses in the late 20th century. It is not so much the presence of systems that is important, but the responsiveness of such systems. Moncrieff (1999) suggests that the ability to respond to emerging strategic issues requires more than just flexibility within the organisation. He finds that the term “agility” best describes a sustainable capacity for change. Agility, as such, connotes poise, balance, flexibility and responsiveness, and suggests that strategy requires considered change. Responsiveness may be a useful measure of the contribution to the effectiveness of systems.

3.7.3 Empirical taxonomic studies

The scope and breadth of the taxonomic approach are exemplified in several empirical studies (Dess & Davis, 1984; Hambrick, 1983; Robinson & Pearce, 1988). For example, a study of 97 manufacturing firms across six industries found distinct, internally consistent patterns of strategic behaviour (Robinson & Pearce, 1988). They include efficient service, product innovation, and brand identification. In another study Galbraith and Schendel (1983) discerned six meaningful strategy types in consumer goods industries: harvest, builder, continuity, climber, niche, and cash-out. In a study of non-manufacturing firms (Hawes & Crittenden, 1984), researchers identified three relatively unique strategic behaviour patterns among retailers marketing generic-brand grocery products: aggressive initiators, conservative reactors, and submissive defenders.

Partial support for the strategic typology of Miles and Snow (1978), in which they identified defenders, prospectors, and analysers, was found (Hambrick, 1983) but different performance tendencies depending on the environment in which the business operated were observed. Clusters of firms pursuing strategies closely resembling Porter's (1980) generic types (low-cost producer, differentiation, and focus) have been found (Dess & Davis, 1984). Those firms identified with one of these strategies, performed better than those classified by Porter as "stuck-in-the-middle". By the mid-80's, Fahey and Christensen (1986) report that little convergence has emerged in the categories of strategy types to which they ascribe data and method limitations. Typological shortcomings have been discussed earlier in this chapter.

3.8 STRATEGY AND THE INDUSTRY LIFE-CYCLE

In the networked economy few electronic businesses could be said to be approaching their maturity phase. Studies have been conducted on the effect of industry evolution and strategy. This stream of research has a clear intent to establish the relationships between conditions, strategy and performance during different stages of industry evolution. Researchers have investigated the strategies pursued and the related performance results in the industry life-cycle stages of emergence, growth, shake-out, maturity and decline (Anderson & Zeithaml, 1984; Hambrick & Schechter, 1983).

The research indicates that firms do pursue different strategies across different industry contexts and that particular strategic behaviours are most appropriate at specific stages; that is,

they are associated with market share gains and profitability enhancement. The findings also suggest that firms adapt their strategies as an industry evolves through its life cycle. Anderson and Zeithaml (1984:21) in an article on the product life cycle, business strategy and performance, found that “growth stage businesses appeared to capitalise on their high levels of relative product breadth, relative product quality, relative quality of services, product research and development expenses and relative vertical integration, for superior market share”. In the maturity phase, there seems to be a clear relationship between efficiency and profitability. The investments required to generate growth are no longer necessary, and efficiency in the form of asset utilisation translates directly into comparative profitability (Anderson & Zeithaml, 1984; Hambrick, *et al.*, 1982). In the decline stage, a different mix of variables appears to be important. The most successful continuing businesses were those in an industry where competitors’ demand forecasts were not overly optimistic; where the orderly retirements of capacity and exits of competitors were coupled with pockets of enduring demand; where strategic exit barriers (especially those concerning manufacturing and technology) were not high for at least some competing firms; and where the continuing firm was best able to serve a pocket of enduring demand. Other successful businesses were those which were able to exit early or milk their investments effectively, maintains Harrigan (1980).

In spite of this research stream “the field still lacks comprehensive empirical analyses. Little systematic empirical work has been done on the emergent, growth and shake-out stages, stage transitions and the adaptation of strategies under changing circumstances even though the maturity phase has been studied most. The parameters delineating maturity have often been reduced to one or two variables, such as market growth rate or decline in number of competitors, and, finally, studies on industry evolution are strikingly constrained by the limitations of cross-sectional research” (Fahey & Christensen, 1986:177).

In the emergent growth phase characterising most web-enabled businesses, the situation is further complicated by the fact that the internet has not had an equal impact on all organisations. The capability development and strategic choices have not necessarily been similar. In a study to profile the types of companies emerging in the wake of the uncertainty generated by the internet, Straub and Klein (2001:4) distinguished between three levels of impact of electronic commerce.

- Alpha-level companies are those that have deployed technologies in order to gain improvements in productivity or reductions in costs;

- Beta-level companies are those that seek access to new markets and seek to increase revenues by providing 24/7 (24 hours 7 days) worldwide availability of products and services; and,
- Omega-level firms are pure online businesses exploiting the power of the technology and, in particular, its ability to gather information about consumer preferences in order to tailor products and services specifically to the needs of individual customers.

Their classification is typical, but by no means the only one; other researchers have used similar criteria (Chaffey, 2002; Nambisan & Wang, 1999:173).

An understanding of the need for differing strategies related to the position of the firm in its life-cycle, is most relevant to firms in the growth phase on the internet. There is a need, however, to locate the firm as a player in an industry of similar organisations. The most influential work on strategy measurement comes from the two schools of thought which view the competitive advantage flowing from the industry positioning of the firm and the deployment of its resources. These are discussed in the next section.

3.9 THE POSITIONING- AND RESOURCED-BASED VIEWS

In the early 1980s Porter introduced a view that competitive advantage flowed from industry positioning (Porter, 1980). A second school emerged in the late 1980s which believed that the resource-based view explained performance (Barney, 1991; Hamel & Prahalad, 1990). This section discusses these two approaches. The complexities associated with their application in the networked economy are reviewed later.

In practice, the use of the environmental assessment technique known as the strengths-weaknesses-opportunities-threats (SWOT) analysis is widespread. It is thought to have its origins in the military. The exercise requires the development of a list of strengths and weaknesses (internal to the organisation) and opportunities and threats (external appraisal) upon which an organisation may rest its strategy. The relationships are shown in Table 3.2.

Table 3.2: The SWOT analysis

S W O T, represents	These are	Reflected in the literature as ...
S = Strengths	Internal to the organisation	The resource-based view
W = Weaknesses		
O = Opportunities	External to the organisation	The positioning-based view (or SCP view)
T = Threats		

This table shows the characteristics of the analytical SWOT process and how they relate to the two approaches to strategy. Since Porter's framework has received more research attention than any other model (Kim & Lim, 1988), this discussion begins with the positioning-based view.

3.9.1 The positioning-based view (PBV)

In his book on competitive strategy Porter (1980) states that the essence of formulating competitive strategy is relating a company to its environment. He believes that the key aspect of a firm's environment is the industry or industries in which it competes. Porter finds that the underlying determinants of the appropriate classification for an industry revolve around five competitive forces which drive industry competition: the threat of new entrants, bargaining power of buyers and suppliers, threat of substitute products or services, and rivalry among existing firms. Based on an analysis of these five forces, an industry may be classified as representing one of five generic industry environments: fragmented, emerging, mature, declining, or global.

In what has become known as the positioning-based view (PBV)⁶, Porter (1980) proposes that firms could earn monopoly rents either by selecting industries that are structurally attractive or by manipulating the forces driving competition. He proposed three potentially successful

⁶ The positioning based view is also referred to in the literature as the structure conduct performance (SCP) view (Barney, 2001).

generic strategic approaches for creating a defensible position and outperforming competitors in a given industry:

- Overall cost leadership, which although not neglecting quality or service, emphasises low cost relative to competitors;
- Differentiation, which requires that the firm create either a product or a service recognised industry-wide as being unique, thus permitting the firm to command higher than average prices; and,
- Focus, in which the firm concentrates on a particular group of customers, geographic markets, or product line segments.

These three generic strategies represent three broad types of strategic groups. The choice of strategy can be viewed as the choice of strategic group in which to compete (Porter, 1980). Strategy, then, is the outcome of the choices made by management. Porter's strategy framework is tied to firm performance. His approach overlaps with other typologies (Kim, *et al.*, 2001). The Miles and Snow prospector (1978) is similar to Porter's strategy of differentiation, and the defender is similar to Porter's strategy of cost leadership (Hambrick, 1983; Dess & Davis, 1984). Porter's strategy of focus is similar to the "niche innovator" of Miller and Friesen (1986). The examples cited in this paragraph illustrate the apparent "looseness" of a purely typological approach.

3.9.2 Cost leadership strategy in the networked economy

Cost leadership can be as viable a strategic choice in web-enabled commerce as it is in off-line businesses (Kim, *et al.*, 2001). Such firms may be particularly appealing to price-sensitive online buyers as the internet eliminates many barriers. Since early mover strategies are transparent and barriers to entry are lower than in traditional businesses, a low cost strategy can serve as a defensive measure. Low-cost firms can be profitable in competitive situations and low prices raise entry-barriers to new entrants. In his work on reducing buyer search costs in electronic marketplaces, Bakos (1997) finds the internet facilitating quick adjustment of prices (low menu costs) so that e-business firms can enjoy a higher level of pricing flexibility and more efficient price competition. The web enables consumers to make price comparisons. There are specific price comparison search tools, which reduce search costs enabling consumers to benefit from nearly perfect information acquired at low or no cost (Bakos, 1997).

Another characteristic of e-businesses is the law of increasing returns (Arthur, 1996). For a firm to enjoy increasing returns, it must secure a critical mass of consumers as soon as possible. A low-price strategy offers a quick and easy way for a firm to secure consumers.

3.9.3 Differentiation strategy in the networked economy

A successful differentiation strategy is built on factors including design, brand image, reputation, technology, product features, networks and differentiated customer service (Kim, *et al.*, 2001). Differentiation should not be imitable. Such differentiating elements are applicable to internet firms. A study by Lynch and Ariely (2000) into search cost and competition on price, quality and distribution found that, provided the product-customer fit is enhanced, price is less of an issue. Their study found that buyers became less sensitive to price when given information about how a particular product might meet their needs.

On the internet as in traditional business, branding remains a powerful way of differentiating a firm and its products. Some studies have shown brand as a determinant of website visits, and others have shown price to be a factor in purchasing decisions for relatively low-price items such as books, entertainment and toys. Brand also becomes a consideration when purchasing more expensive items such as computers, automobiles, furniture, banking and financial products (Kim, *et al.*, 2001).

Lower switching costs on the web encourage differentiation and where in traditional businesses consumers may tolerate mediocre products and services, web-enabled access to information previously impossible to obtain or to compare, allows easy switching. Web marketing encourages channel differentiation (Kim & Lim, 1988).

Factors such as speed of delivery, convenience and the security of transactions are differentiators in the e-commerce environment. Although popular mall sites like Kalahari.net do not always offer the lowest prices, people are attracted to these sites because of their brand reputation and credibility (Smith, Bailey & Brynjolfsson, 1999). This suggests that many e-commerce consumers may be just as concerned about security and delivery reliability as they are about price. However, pursuit of the lowest price is not necessarily the main reason customers purchase items on the web, as indicated in a study by J P Morgan (1999). This survey

highlighted support as the main criterion for such customers. Price was important only to 19% of the respondents.

3.9.4 Focus strategy in the networked economy

A focus strategy targets specific groups of buyers or product lines. Such strategies emphasise either low costs or differentiated products and services. New entrant web firms can compete against large established firms by focusing on a particular niche, such as eBay in its infancy taking on Sothebys in the auction market. A focused strategy increases the chance of survival and success and may function as an entry barrier. Lower investment levels required by online businesses enables lower break-even points. Thus, targeting even small market segments can be a viable strategy for online firms. Consumers may be easily connected with firms that focus on niche markets due to the internet's search capabilities, state Kim, *et al.*, (2001:6).

The web also enables firms to customise offerings to meet the specific, focused, needs of customers (Bakos, 1997). The application of customer relationship management (CRM) systems allows customers to be identified on every visit to a website. Their navigation, browsing and purchasing patterns can also be recorded.

The generic strategies of cost leadership, differentiation and focus have relevance in traditional markets. There are aspects of these strategies that may apply, possibly in a different sense, to online firms. In essence, the RBV accommodates benefits flowing to the firm by virtue of its location in an industry, and the e-business firms are no exception. Specific benefits include industry-sourced revenue streams (identified later in Section 3.9.5 as “Schumpeterian rents”), augmented by how dominant the firm is in its market. The PBV also suggests advantages from being “first-to-market” with a product. Cost leadership and differentiation through products or processes complete the characteristics of this dimension. In the next Section, where the resource based view is discussed, the relationship between core competences and business performance is explored. These factors all contribute to the macro-economic positioning benefits accruing to the firm.

Based on the foregoing, however, it cannot be definitively argued that networked economy firms can benefit to the same extent as their historical counterparts. The external focus discussed above, must be complemented with the internal capabilities of the firm.

3.9.5 The resource-based view (RBV)

Needing to go beyond the PBV's "industry explanation" gave rise to the RBV, the basic principles of which have been well researched, documented and reviewed (Barney, 1991; Priem & Butler, 2001). This view of the firm builds on Schumpeter's (1934) perspective of value creation. It views the firm as a collection of resources and capabilities. In perspective it is closer to the concept of the business model than the PBV. The RBV posits that value can be created by marshalling and uniquely combining a set of complementary, specialised resources and capabilities. These capabilities are heterogeneous within an industry; they are scarce, durable, not easily traded and difficult to imitate. (Barney, 1991; Hamel & Prahalad, 1990, 1994). RBV theory postulates that the services rendered by the firm's unique bundle of resources and capabilities lead to value creation. These resources and capabilities are valuable if they reduce a firm's costs or increase its revenues compared to what would have been the case if the firm did not possess those resources. Utilisation of the resource is more important than its possession. A resource only becomes a competitive advantage when it is applied to an industry and brought to market (Kay, 1993).

Some of the key capabilities identified as possible dimensions of strategy include innovation, specifically the aggressiveness with which resources are allocated *vis-à-vis* the firm's competitors (Venkatraman, 1989), and information systems (Henderson & Venkatraman, 1993; Van Der Zee & De Jong, 1999). The latter dimension is discussed in greater depth later in the dissertation.

The RBV has given rise to a debate on the extent to which resources can explain the persistence of superior economic returns. There is increasing empirical work available, on the origins of competitive advantage (Cockburn, Henderson & Stern, 2000), that seeks to reconcile both explanations within the context of the networked economy. The central issue is to understand the patterns of resource development and what conditions influence these developments. The next section, therefore, reviews the relevance of both perspectives in the networked economy.

3.9.6 The RBV in the networked economy

Strategy defines the fit between the organisation and its environment. The internet introduced major changes in resource markets. The economic environment is moving towards open markets, mobile labour and information abundance. Resources are increasingly tradable and the advantages accruing from market entry and strategic imitation are falling. Furthermore, internet transparency could expose competencies and increase their imitability. In fluid resource markets, sustainable advantage must lie in assets hard to discern and awkward to trade.

Within the definition of the RBV, in which the firm is a collection of resources and capabilities, certain behavioural competencies also add value. Management attitude is one such competency. This trait would include the value to the firm of an analytical competence, as well as its approach to managing risk. Venkatraman (1989:948) posits analytical ability as the problem-solving posture of the firm. Given the environmental prerequisites for success, such a trait would serve as an important source of value creation and competitive advantage for a networked economy venture. Venkatraman cites the work of Miller and Friesen who consider this characteristic to be the tendency of a firm to search deeper for the root cause of problems, and then generate the best possible solutions (Venkatraman, 1989:948). Another behavioural characteristic is that of “Riskiness” viewed by Venkatraman (1989:948) as impacting at the organisation level, rather than at the individual level. It captures the risk profile of management as reflected in their resource allocation decisions, as well as in their choice of products and markets.

The resource-based approach to strategy has recently become a perspective in strategy research which does not always succeed in combining realism with rigour. The authors Johnson, Melin, and Whittington (2003) in a paper on micro-strategy as an enterprise-wide activity, identify a problem around the lack of theory regarding the creation of new resources, which is a common feature of networked economy firms. This shortcoming, they maintain, tends to give the RBV a retrospective character and questions its applicability to today’s managerial practice.

Swift responses counter environmental turbulence. Coping with a “hyper-competitive” environment, speed, surprise and innovation become the characteristics of success for competitive advantage (D’Aveni, 1998). Hyper-competition impacts on both the level and the frequency of

strategy activity. Fast and innovative responses to competition require organisational decentralisation, moving strategic decisions to line management who are close to customers and employing a dynamic capability (Eisenhardt & Martin, 2000). Strategic innovation increasingly involves managers at the periphery, rather than just those at the centre (Hamel & Prahalad, 1996a). The hypercompetitive situation moves strategy-making from measured cycles into a much more continuous process (Brown & Eisenhardt, 1997). Strategy-making has become a routine feature of organisational life. With its impact on level and frequency, hypercompetition makes strategy something in which more people are involved, more often than ever before. Speed and agility are some of the requirements for effective competition.

Progress on content issues of strategy research is beginning to rely increasingly on a “micro perspective view” (Johnson, *et al.*, 2003). Traditional content research has introduced important concepts and insights, but much of this research has been confined to macro-level analysis. This has implications for e-commerce firms, whose use of technology enables the staff complement to be kept to a relatively small group of multi-skilled people. The smaller the firms, the more the need for everyone to be involved in strategy formulation and implementation.

Within the strategy field, the resource-based view has provided much in terms of the value-creating capacity of organisations, a pervasive feature of networked-economy businesses. The debate over the resource-based view has, however, been largely conducted either theoretically or empirically at the macro-level, with large-scale statistical studies (Rumelt, 1991). With no firm conclusions emerging “... the macro approach to the resource-based view is in danger of failing to deliver against its promises” (Johnson, *et al.*, 2003:7). Most of the new businesses in the networked economy tend to be small organisations.

There are also more general shortcomings. The resource-based view suffers from broad categories. Priem and Butler (2001) maintain that the RBV definition of resources is typically all-inclusive and discriminates poorly between the resources managers can manipulate, and those beyond their control. Much RBV research, they maintain, marginalises activities in organisations. The questions of how valuable resources are built and how they generate superior returns, are left undisturbed in the “black box” of process (Priem & Butler, 2001).

The PBV and RBV dominate the academic strategy debate. There have been similar contributions from other authors. The writings of Ohmae (1982), for example, describe how Japanese companies benefited from the use of strategy, and how it is most effective when it combines analysis, intuition and willpower in the pursuit of global dominance. Their performance, however, was attributed to operational effectiveness. This differential has narrowed over time and diminished their advantage (Porter, 1996:63). Hamel and Prahalad (1989), maintain that successful companies have competency ambitions in total disproportion to their positions, and change the rules of the game for effective performance. This theme is continued in Hamel's subsequent writings on innovation (Hamel, 2000).

The preceding discussion traced the evolution of strategy with the purpose of determining its contribution to the strategic architecture construct. It is evident that the positioning and resource based perspectives form a useful framework. Certain aspects of strategy such as futurity, value creation and strategy-formulation are found to be more effective in coping with complex environments when they are pervasively and fundamentally distributed throughout the firm. The construct is to measure the competitive behaviour of web-enabled firms. In the next section of this chapter the dimensions of strategy, gleaned from the foregoing discussion, are explored in conjunction with the associated items for their measurement.

3.10 DIMENSIONS OF STRATEGY

This study postulates that competitive behaviour, following one or more of the abovementioned approaches, explains some of the variance in the performance of networked economy firms. The previous sections began to reveal the dimensions of strategy relevant to this study. These are further elucidated and their inclusion motivated.

These dimensions should apply to any firm, whether traditional or networked. It is not correct to state conclusively whether dimensions are relevant or not to firms in the networked economy. For example, corporate diversification dates from the discipline's foundational work (Chandler, 1962), but decades of research have done very little to establish any positive relationships between diversification and performance (Johnson, *et al.*, 2003). Grant (2002:91) concludes wryly in a recent review of diversification research that "After nearly half a century of research, the advice we academics can offer managers in designing and implementing their corporate strategies is tentative at best. More than a hundred academic studies have failed to

determine if diversification enhances profitability or whether related diversification outperforms unrelated diversification”.

The debate in the literature questions the taxonomic approach. For example, there are articles and studies on traditional firms which challenge Porter's typology and question his claims about the exclusivity of the generic strategies. This claim relating to cost leadership and differentiation was challenged in a pre-internet study on differentiation and low cost. The researcher (Hill, 1988) argued that sustainable competitive advantage rests on the successful combination of these two strategies. Another study found the development of any successful strategy must reflect the larger competitive environment (Murray, 1988). It concluded that only one strategy should be employed in response to any particular environment. Another study could not say conclusively that a combination strategy would be associated with lower performance (Miller & Dess, 1993). Rapidly changing competitive environments may require more than flexibility (Moncrieff, 1999) and the ability to mix more than one generic strategy. Latterly, the internet's ability to reduce information asymmetries and transactions costs will also "... create opportunities to rewrite the rules on business strategy." (Afuah & Tucci, 2001:6). It appears that a combination of generic strategies in e-business competitive environments, is not only possible but may be unavoidable.

Further, there is ambivalence towards the application of the PBV to networked economy firms. Porter (2001:64-66) exhorts business leaders to "return to fundamentals" and abandon thoughts of "new business models" or "e-business strategies" that he says encourage managers "to view their internet operations in isolation from the rest of the business." He argues that the best methods of achieving these goals, including operating within a vertically integrated structure, must be unchanged too. This view is criticised by Tapscott, who states that "the Net is much more than just another technology development; the Net represents something qualitatively new - an unprecedented, powerful, universal communications medium. Far surpassing radio and television, this medium is digital, infinitely richer, and interactive. The Net is becoming ubiquitous; it will soon connect every business and business function and a majority of humans on the planet." (Tapscott, 2001:4).

Straub (2004:208) documents several limitations of Porter's approaches in net enhanced environments.

Table 3.3: Limitation of Porter's approaches in networked economy environments

Area	Limitation
Scope of model coverage	Tends to be more applicable to manufacturing than to services, which are key to the networked economy
Distinction between line and staff functions	Over time, some staff functions, such as IT, have become integral to core processes for delivery of goods and services; not a clear line between line and staff
View of relationships with customers and suppliers as always being adversarial	Emphasis in networked economy seems to have shifted to cooperative relationships
Five Forces include only entities of rivals, suppliers, and customers	Complementors, outsourcers, and strategic partners are not considered

Source: Straub, 2004:208

In view of the overwhelming evidence, a portion of which has been presented in the discussion above, it is difficult to wholly subscribe to Porter's view about the internet. He is correct however, in that the internet should not be seen in isolation from the rest of the business. "In many cases the internet compliments rather than cannibalises companies' traditional activities and ways of competing" (Porter, 2001:73).

These academic clashes, however, do not detract from the need for competitive advantage through effective strategy development; they appear to differ on content. This does not detract from the use of strategy dimensions in the architecture construct.

3.11 CONTRIBUTION TO STRATEGIC ARCHITECTURE CONSTRUCT

From the preceding discussion, various dimensions worthy of consideration in developing the strategic architecture construct are suggested. This list is built upon the work of Venkatraman (1989:948-9) and others. The following broad dimensions are encountered:

- **Futurity** – The attitude of management towards achieving the desired state of a business (Andrews, 1980; Ansoff, 1968);

- **Defensiveness** – A firm’s defensive behaviour (Miles & Snow, 1978) manifested by the emphasis on cost management and efficiencies;
- **Innovative aggressiveness** – Management posture towards allocating resources for the long or short-term improvement of its market position through innovation (Hamel, 2000; Venkatraman, 1989:948);
- **Risk profile** – The extent of risk as reflected in resource allocation decisions and choice of products and markets (Venkatraman, 1989:949);
- **Analysis** – The value of problem solving as an important characteristic of organisational decision-making, including the tendency to search for the roots of the problem, and generating the best possible solution alternatives (Venkatraman, 1989:949);
- **Proactiveness** – The continuous search for market opportunities and experimentation with potential responses to changing environmental trends (Miles & Snow, 1978). Identifying and exploiting new opportunities, however, occurs within the framework of innovation. Also, in the fast-paced network economy success is associated with being first with results. The context of this dimension is thus well encapsulated by the dimension of innovative aggressiveness; and
- **Macro-economic positioning** – The dimension measures the positioning-related benefits to the firm from its industry. It includes industry-sourced revenue streams; market position; product, process and cost leadership; and differentiation. Also included is the contribution made by the firm’s core competences (refer to Sections 3.9.1 and 3.9.5).

Each of these dimensions is manifest in an organisation in terms of certain items. The items, extracted from the preceding literature study, based on practice and the input of expert practitioners, are summarised in the table below. Certain dimensions have not yet been included, for example, harmony and dynamic capability. These and others will be incorporated in the contribution of business models, organisational flexibility or configuration theory to the dimension of the construct. Table 3.4 summarises the key dimensions of strategy which are to be considered a requirement for the architecture construct.

Table 3.4: Emerging strategy dimensions for strategic architecture

Manifested in an organisation as	Could be measured by
<p>Futurity – The strategy formulation process resulting in a desired future (Andrews, 1980; Ansoff, 1968; refer to Section 3.2).</p>	Frequency of formalised strategic planning sessions
	Time horizon for strategic decision making
	Use of forecasting processes
	Relative emphasis on longer-term considerations (Venkatraman, 1989)
<p>Defensiveness – defensive behaviour (Miles & Snow, 1978). This includes the various strategies the firm develops as it competes in an industry sector. Refer to Section 3.7.1.</p>	Low cost (Porter, 1980)
	Focus strategy – serving defined markets (Porter, 1980)
	Differentiation (Porter, 1980)
	Defence of core technologies (Thompson, 1967)
	Economies of scale
	Efficient procurement
<p>Innovative aggressiveness – The allocation of resources at a faster rate than competitors (Venkatraman, 1989). Refer to Section 3.7.1.</p>	New products developed
	New markets entered
	Rate of investment into market share
	Ranking of market share as a contributor to profitability
<p>Information systems - the presence and responsiveness of systems. Re-</p>	Presence and responsiveness of appropriate information systems

Manifested in an organisation as	Could be measured by
fer to Section 3.7.3.	Systems alignment with strategy (Henderson & Venkatraman, 1993)
Risk profile – an organisational trait linked to the attitude towards risk-taking (Venkatraman, 1989:949)	Risk associated with the allocation of resources
	Risk associated with new products or markets
Analysis – The firm’s attitude toward problem-solving (Miller & Friesen, 1978; Venkatraman, 1989; refer to Section 3.9.6)	Searching for root cause problems (refer to Section 3.9.6 and paragraphs above)
Macro-economic positioning – The positioning of the firm in its industry. Refer to Section 3.9.1.	Benefits flowing from the PBV and RBV

To this list are added two further possible dimensions from the study of core competencies. These are knowledge contribution and flexibility, and are shown in Table 3.5. Possible measures have also been indicated. These are also fleshed out further in subsequent analysis.

Table 3.5: Emerging competencies as possible dimensions of strategic architecture

Manifested in an organisation as	Could be measured by
Knowledge contribution	Net gain/loss of technical skills
	Incentive programmes
Scalability	The time taken to respond to quantum changes in system loading, for example, the matching of investment with business requirements.

Each dimension has several items associated with it by which that dimension could be measured. These items, sourced from the study of strategy, will be further refined in the light of value creation, business models, knowledge management, harmony and dynamic pliancy. They may contribute to the item pool and have possible application in the questionnaire.

3.12 IN SUMMARY

Strategy is a process by which a firm works towards attaining a desired future. It is measured, in this comparative study, in terms of the dimensions appropriate to firms competing in the networked economy.

In order to be successful, firms on the internet have had to develop new rules for effective competitive advantage. The evolution of strategy measurement introduced different perspectives on strategy and performance. Beginning with management's endeavours to propel their firms to a desired future, strategy research embraced content and process. The taxonomic approach introduced typologies associated with management behaviour. It was shown that business models follow a systemic approach to strategy development, allowing for pluralistic outcomes. It has been shown in pre-internet studies that firms adopt different strategic behaviours at different stages of their life-cycle. Growth businesses capitalise on their high levels of product breadth, quality and vertical integration. Similar observations can be made of networked economy firms.

Strategy began to adopt an external perspective with the positioning-based view, which sought to optimise the fit between the firm and its environment. Various "generic" strategic behaviours were observed as management defended a firm's position. The RBV arose from studies of the value creation potential existing within the firm. Based on the work of Schumpeter in the 1930s, the firm became viewed as a collection of resources and capabilities with value flowing through deploying a unique set of specialised resources and capabilities. Both approaches were reviewed for their suitability in the networked economy, and found wanting.

All the preceding views, including the evolution of strategy, contributed towards the strategy-based dimensions of the construct. The next chapter explores the characteristics of the networked economy and reviews the contribution of business models.

CHAPTER 4

BUSINESS MODELS AND THE STRATEGIC ARCHITECTURE CONSTRUCT

4.1 INTRODUCTION

In the 1960s, as typified by Chandler (1969), management viewed strategy as the setting of long-term goals and objectives, defining actions and allocating resources. Practitioners in today's networked economy refer to strategy as the unique and sustainable way a firm creates value (Hax & Wilde, 2001b). These two chronologically and diverse perspectives bracket the evolutionary process, which begins with corporate strategy and ends with the business model.

The first chapter of the dissertation introduced the rationale for this research project. After reviewing the challenges facing internet-spawned companies, the study proposed strategy formulation and implementation as a prerequisite for any business striving for competitive advantage. In a networked economy, the view of this dissertation is that such a strategy would, of necessity, contain elements drawn from the disciplines of, *inter alia*, strategy and business models. The strategic architecture construct was motivated as a predictor of performance for e-commerce businesses. Developing appropriate dimensions began in chapter two with the exposition of technological terms and concepts. Chapter three discussed the contribution of strategy and identified dimensions considered relevant to the strategic architecture construct, and suggested that a challenge for managers in electronic businesses is to identify and understand the new rules for operating in the networked economy. Traditional strategy alone is a necessary, but not sufficient condition predicated success for such firms.

Building further on the strategy foundation, and in similar vein, this section posits that the business model alone, contrary to claims of early e-commerce entrepreneurs, is not sufficient a basis on which to build a successful commercial web-enabled venture. Changes in the business domain have introduced a need for changed behaviour of internet firms. This section, leading up to the contribution of the business model concept to the dimensions of strategic architecture, reviews the prevailing economic fundamentals in order to determine whether the economic paradigm has changed.

4.2 THE ECONOMIC LANDSCAPE

The new drivers of growth have introduced fundamental economic change. Such developments could begin to question the role of traditional competitive behaviour, and the appropriateness and validity of its associated strategies in this environment. In the e-business literature various writers (Kalakota & Robinson, 2001; Rayport & Jaworski, 2001; Tapscott, *et al.*, 2000) echo the sentiments of strategic management authors, Thompson and Strickland (2001:225), who maintain that “the impact of the internet and the rapidly emerging e-commerce environment is profound. ... There can be no doubt that the internet is a driving force of revolutionary proportions”. Developments of this magnitude that impact on the entire world do not happen very often. When they do, it may seem as if the old rules no longer apply. Although this is a widely accepted popular proposition, it is a view not necessarily shared by all.

Technology and inter-connectivity have changed the ways in which economic entities interact. The choices now available to customers, management’s knowledge of competitor behaviour such as dynamic pricing and channels used for delivering knowledge content, have introduced new behaviour. When the telephone enabled communications and mechanisation produced the production line, firms had the choice of ignoring the shock created by these interventions, at their peril, or embracing the concomitant benefits (Carr, 2003). This same dilemma faces the business manager of today.

In the networked economy economics is no longer the study of scarcity. Customers are confronted with abundance as many of the non-physical, knowledge-based products of the networked economy are reproduced and distributed at near-zero marginal cost (Tapscott, *et al.*, 2000:5) making the creation of value that much more of a central purpose in today’s businesses. The new drivers in the economy and the changes in the environment have encouraged some businesses to adopt novel approaches to value creation. In doing so, however, some may have irrationally overstepped the mark and abandoned strategy along with its rich and valuable heritage.

Economic resources are broadly classified as labour (viewed as human skills and knowledge in the networked economy), capital (available in the form of financial, network or relationship resources) and land (equivalent to information and communications technologies). Anything

produced in the economy comes from a combination of these resources. In the networked economy, business offerings come from the application of knowledge, networks or technologies. The objectives of economics are full employment, growth, price stability, balance of payment equilibrium and equal and fair distribution of benefits (Smit, Adams, Mostert, Oosthuizen, van der Vyfer & van Gass, 1996). Objectives are accomplished in ways which have created different economic resource allocation and ownership systems. The extremes are capitalism, with privately-owned production factors and a minor state role, and communism, with its large state intervention and central planning.

In the 19th century, falling transport costs stimulated globalisation. Today it is the rapidly declining cost of communication and the resultant creation of networks. The economic principles, however, are “exactly what traditional economic theory would lead you to expect” (The Economist, 1999:53). The employment basis of the economy has undergone fundamental changes. This is reflected in the fact that fewer people today are employed in the agriculture and industry sectors and more in services as Table 4.1 indicates.

Table 4.1: US employment by sector (percent of total)

Sector	1820	1900	1995
Agriculture	75	40	5
Industry	15	30	20
Services	10	30	75

Source: US Department of Commerce; OECD, cited in The Economist (1999:54)

While technology appears to have been “destroying” jobs, millions of others have been created. Most new positions are being created for knowledge workers. The generic outputs of the economy have moved over time from agrarian to industrial, to information, and now to knowledge.

There are differences between the economics of material goods and the economics of knowledge products. With goods, ownership passes to the buyer. In contrast, however, when a song, software or idea is sold, the seller retains possession. Information can also be replicated at almost nil cost and without limit. Goods wear out; information never does, but can become

out-dated or obsolete (Evans & Wurster, 1999). There are vast improvements in efficiencies through the application of technology. From an economic perspective, online retailing enables the same retail service to be provided, but now utilising fewer resources. Resource savings occur both on the selling side, where the labour, land and capital (or their networked economy equivalents) needed to make goods are available online, and on the buying side, where consumers save time by shopping online. In the long-term, online retail market profitability continues to be supported by barriers of entry. A few firms may survive in each retail market and each survivor should have a monopoly on some valuable aspect of retail service, or may be able to co-operate with its few competitors to boost mark-ups and profits in the same way as happens in traditional markets.

The Economist (2000:6,9) suggests measuring the impact of technology on economics by the effect on everyday life, business efficiencies and new product creation. The Economist quotes the book, “*Information rules*” and supports the view of its authors that “technology changes, economic laws do not”. The business cycle has not been eliminated, excessive growth may still lead to inflation and share prices still depend on profits. Globally, the impact of e-commerce retail turnover may appear substantial, and will grow over time. In South Africa, however, the impact is small. Online sales still represent much less than 1% of conventional retail sales (Goldstuck, 2002).

The internet has caused an economically-disruptive shock in the world economy, to which many players are still adjusting. It has led to the creation and growth of entirely new industries, including online retailing, online auctions, on demand entertainment, web consulting and more. The internet is creating unprecedented opportunities for entrepreneurs who understand the potential of the new technologies. Economists are challenged by the non-physical, knowledge-based products of the networked economy that are reproduced and distributed at near-zero marginal cost (Tapscott, *et al.*, 2000:5). Economic principles may prevail, but networks and connectivity have forever changed the rules of the game for business success.

Networks are “stable interorganisational ties which are strategically important to participating firms. They may take the form of strategic alliances, joint ventures, long-term buyer-supplier partnerships and other ties” (Gulati, Nohria & Zaheer, 2000:203). In its broadest sense networks include the formation of entities, the relationships between such firms, the creation of value and how differential positions and relationships in networks affect their performance.

Networks of businesses in which market and hierarchical governance mechanisms coexist has enhanced the range of organisational arrangements for value creation (Amit & Zott, 2001:498). By having all participants online the character of economic markets has undergone a fundamental change as knowledge characterises future products.

4.3 THE KNOWLEDGE CONTRIBUTION

The purpose of this section is two-fold. In the first instance it is to locate knowledge as a resource in a networked economy context in order to develop a knowledge dimension for the research construct. The second purpose of this section is to explore the most recent writings on knowledge and its relationship with strategy. This section begins with the convergence of knowledge and networks into the concept of knowledge networking, and reviews knowledge and its role in the firm.

There is a trend towards the convergence of networking and the application of knowledge. In his book Skyrme (2000:35) refers to this phenomenon as knowledge networking. It is a characteristic of the internet which has no boundaries and allows people to work in virtual organisations, sharing technology and knowledge. These interrelationships are shown in Figure 4.1.

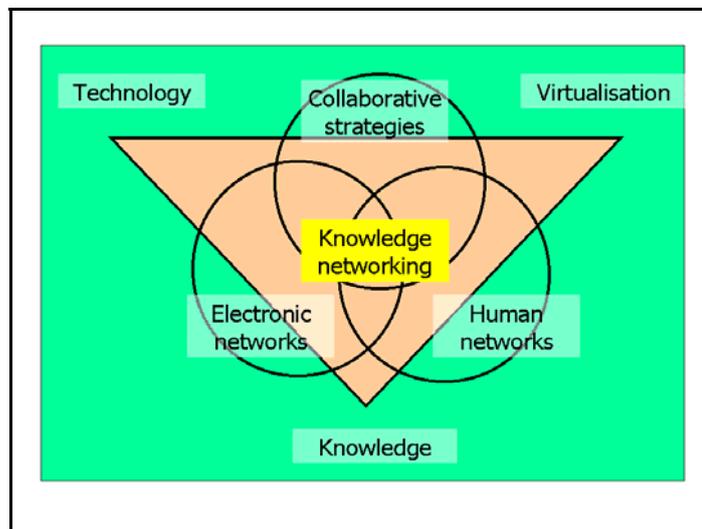


Figure 4.1: Convergence and collaborative strategies

Source: Skyrme, 2000:42

Knowledge networking, according to Skyrme (2000:35), is a “rich and dynamic phenomenon in which knowledge is shared, developed and evolved, ... a powerful juxtaposition of two im-

portant concepts – that of the strategic resource of knowledge and that of the human act of networking.” It can be viewed as a process which combines and recombines the knowledge, experiences, talents, skills, capabilities and aspirations of people in dynamic patterns.

Knowledge has many forms. Facts are the knowledge to perform a certain task or having a particular skill. There is knowledge of personal beliefs of right or wrong. The most practice-oriented categorisation is that suggested by Savage (1995) in his work on virtual enterprising, dynamic teaming and knowledge networking. The categories are know-how (a skill, a procedure); know-who (which person can help with a question or task); know-what (structural knowledge); know-why (a deeper knowledge understanding the wider context); know-when (a sense of timing, and rhythm); and know-where (a sense of place). The progression from data to knowledge and beyond is driven by a process of adding value. Knowledge can be shown as a hierarchy with each level exhibiting different characteristics and demanding higher levels of integration as shown in Figure 4.2.

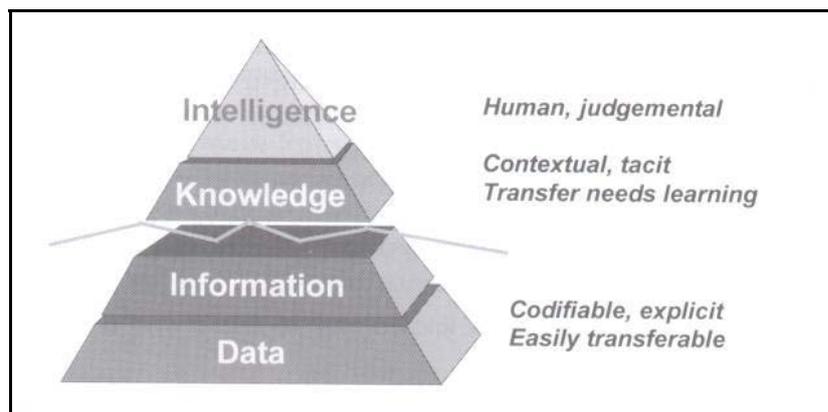


Figure 4.2: The knowledge hierarchy

Source: Skyrme, 2000:47

This knowledge hierarchy, containing the lowest to highest levels of value-add has the elements of data (facts and figures); information (data with context); knowledge (information with meaning); and wisdom (knowledge with insight).

There is a clear distinction between explicit and tacit knowledge. According to Nonaka and Takeuchi (1995) in their work on the knowledge creating company, explicit knowledge is that which can be expressed in words and numbers and can be easily communicated and shared in the form of hard data, scientific formulae, codified procedures or universal principles. Tacit

knowledge is highly personal and hard to formalise such as subjective insights, intuitions and hunches.

The characteristics of knowledge networking include structural components, the network's nodes and links; individuals who belong to the networks and may be more central in some than in others; the conversations that take place either asynchronously or synchronously, and the flow of knowledge in both deliberate and unanticipated ways.

Such networks aggregate knowledge, thus providing new resources for problem solving. Knowledge networking is a way of working which involves openness and collaboration across departmental, organisational and national boundaries, building mutually beneficial relationships. It does however create organisational challenges and poses problems of its own in the process of effectively harnessing and exploiting such generated knowledge.

The contribution of knowledge to the economy, according to Skyrme (2001:258), is still in its infancy. He sees developments in knowledge products, online knowledge businesses and knowledge markets as pivotal in the twenty-first century economy. It may, however, require more than new technologies and applications to change the shape of knowledge businesses. Other interdependent factors, such as political, economic and social developments, could play substantial roles. Skyrme (2001:257) cites evidence that knowledge is at the heart of economic wealth creation. From predominantly agricultural economies, where applied knowledge brings new methods, disease-resistant seeds and increasing productivity, to developed economies, where knowledge is a key factor behind products such as software, biotechnology, consultancies and financial derivatives. Growth in the knowledge economy should enable supporting knowledge businesses to grow as well. Before these economic and knowledge-based principles can impact on value creation they need to incorporate the specific characteristics of digital exchanges.

4.4 AN ECONOMIC VIEW OF ELECTRONIC MARKETS

Electronic markets are free exchanges exhibiting characteristics which set them apart from conventional exchanges. They are shaping business models in their evolution. They have some unique characteristics.

4.4.1 Market friction

A frictionless market is one which has low search costs, strong price competition and low margins. At this stage in the evolution of the web it is unsure whether for internet consumer goods markets, strong price competition will prevail or if some other market characteristics will allow retailers to maintain significant margins on the goods they sell. There are a variety of ways to analyse the level of friction in internet markets. Some studies in this area compare the characteristics of electronic markets to conventional markets while others analyse behaviour within electronic markets. Smith, Bailey and Brynjolfsson (1999:2), in their review and assessment of digital markets, identify four dimensions of efficiency in internet markets when compared to brick and mortar markets: price levels, elasticity, menu costs and price dispersion.

4.4.2 Price levels

In retail markets where sellers dictate prices, efficiency occurs when prices are set equal to the retailer's marginal cost (Hall & Lieberman, 2001:171). Marginal cost pricing is the efficient outcome. Pricing above marginal cost would exclude such beneficial trades from consumers who value the product at a level between the price and the marginal cost. Electronic markets can be expected to be more efficient than conventional markets, because there is a reduction in information asymmetries that arise from lower search costs. If electronic markets facilitate consumer knowledge of retailers' prices and product offerings, the lower search costs could lead to lower prices for both homogeneous and differentiated goods.

Early empirical studies are inconclusive. In an early study on books and CDs sold through the web, researchers (Brynjolfsson & Smith, 1999) examined prices for electronic and conventional channels in 1998 and 1999. They found prices 9 - 16% lower on the internet than in conventional outlets, even after accounting for costs from shipping and handling, delivery and local sales taxes. In contrast, two earlier studies on electronic and conventional auction markets for used cars (Lee, 1997) and books, CDs, and software sold on the internet and in conventional channels (Bailey, 1998), found that prices in the electronic markets were higher than prices in the conventional markets. Since there were differences in the methodologies used by the researchers (including the retailers, products and time period sampled) direct comparison of their results is not possible. However, one possible explanation for the differences in their findings is that internet markets may have become more efficient over time.

4.4.3 Price elasticity

Price elasticity measures sensitivity of consumer demand to changes in price, and is an important signal of market efficiency (Hall & Lieberman, 2001:89). Higher price elasticity may result from lower search costs or lower switching costs for internet consumers. In their study Smith, *et al.*, (1999), cite Goolsbee who found online consumers highly sensitive to local tax policies. Under these pressures consumers may be more likely to purchase online. While this study does not specifically test price elasticity between internet firms, it does point to a high degree of price sensitivity between the total cost of goods online and the total cost in a conventional outlet. In the case of differentiated goods, price sensitivity could be expected to be lower online than in conventional outlets as lower online search costs allow consumers to more readily locate products that better meet their needs, and by evaluating products online consumers can be better informed.

4.4.4 Menu costs

The costs incurred by retailers when making price changes are termed “menu costs” (Smith, *et al.*, 1999:5). In the case of conventional retailers, this relates to the costs incurred when relabelling products on shelves. In an electronic market, such costs should be lower since they comprise primarily the cost to make a single price change in a central database. In economic terms, retailers make a price change when the benefit of the price change exceeds the cost. If menu costs are high retailers may be less willing to make small price changes and as a result could be less able to adapt to small changes in supply and demand. Bailey (in Smith *et al.*, 1999:3), finds that menu costs are lower in internet markets and that internet retailers make significantly more price changes than conventional retailers. The authors conclude that there are lower menu costs on the internet compared to conventional outlets. The study also finds that internet retailers make price changes that are up to 100 times smaller than the smallest price changes observed in conventional outlets.

4.4.5 Price dispersion

Price dispersion refers to the charging of different prices for the same item at the same time by different vendors (Smith, *et al.*, 1999:5). This phenomenon arises when search costs are high or when consumers are incorrectly informed of prices. An economic model of market efficiency assumes that products are perfectly homogeneous, consumers are informed of all prices, there is free market entry, a large number of buyers and sellers and no search costs. In

theory this results in the retailer with the lowest price receiving all sales. As a result, all prices are driven to marginal cost. In reality, however, price dispersion does exist. If search costs are lower in internet markets (Bakos, 1997) and if consumers are more readily informed of prices, price dispersion on the internet should be lower than it is in comparable conventional markets. This hypothesis, however, is not supported by existing empirical evidence. The two studies by Bailey (in Smith, *et al.*, 1999:5) find that price dispersion is no lower in internet markets than compared to conventional markets. They find that prices for identical books and CDs at different retailers differ by as much as 50%, and price differences average 33% for books and 25% for CDs. These findings are possibly attributed to several factors, including market immaturity and heterogeneity in retailer attributes such as trust and awareness.

4.4.6 Switching costs, lock-in and channel conflict

Customers may initially be attracted to a product by its attributes. Once on a site, they are then retained by externalities, such as customer lock-in, created as the customer uses the product or benefits from accessing the supplier's website. There are barriers to prevent customers from switching to another vendor. These go beyond the product itself. Examples of such barriers are customisation, such as "one-click" ordering accounts, and learning or familiarity with a retailer's site (Hax & Wilde, 2001b:34) and loyalty schemes and discounts.

In the early stages of the web, retailers developed new channels to communicate with their consumers which challenged the traditional marketing channels. This B2C interaction was pioneered by pure-online internet companies such as Amazon.com. Traditional companies initially only observed this experimentation. Once consumers were seen to value such channels, vendors moved swiftly to establish their internet retail channels.

While e-tailers continued to grow their brands and market share, the internet retailers with more than one channel began to address channel conflict occurring when a company's web channel becomes a competitor for its physical channel.

4.5 INTERMEDIATION, DISINTERMEDIATION AND RE-INTERMEDIATION

Interjacency is a noun that describes an existence between entities. The value chain has several links between the producer and consumer. The supply chain links vendors to a manufac-

turer. Shortening either, the removal of the “middle man”, normally prompted by cost reduction, is an act of disintermediation. The changing role of an e-business intermediary can lead to changes in the firm’s value-chain. In a market with friction, intermediation in the value-chain may reduce this friction because the intermediaries can specialise in some market roles such as direct selling. The web generally promotes disintermediation (the removal of intermediaries from the value-chain) but it is unlikely that those who create value will be totally removed. Signs of re-intermediation are occurring as intermediaries take on new roles to provide value in ways which differ from traditional intermediaries.

As more information about products and services becomes instantly available to customers, traditional intermediary businesses find themselves disintermediated. This is evident, for example, in the travel industry where in the United States online travel services have seen the fastest growth. In South Africa, the emergence of businesses such as eTravel and the direct selling of air-tickets by South African Airways (www.flysaa.com), Kulula.com and 1Time is impacting on the traditional domain of the travel agent. The structure and logic behind some traditional industries is, accordingly, beginning to change shape. At the same time, new ways of creating value are opened up by the new forms of connecting buyers and sellers in existing markets (re-intermediation), and by innovative market mechanisms and economic exchanges.

The impact of disintermediation is not unexpected. In 1937 Coase (1937) in a paper on the nature of the firm, maintained that there was a need for intermediaries only in certain kinds of exchanges. Coase argued that from an economic perspective, the crucial factor was whether the participants in the transaction could save more money by hiring the middleman than it cost not to hire him. The internet can drive down the value added by the intermediary as it becomes more economically efficient for individuals to carry out their own transactions (Cohen, 2002:108). The value of intermediaries is not always appreciated as eBay found out when they tried in vain to enter the business of upmarket auctions. After much fruitless effort, management realised that “an auction house is filled with fine antiques, oriental rugs and other rich people. Potential buyers are plied with expensive champagne by a charming and ingratiating staff” (Cohen, 2002:224). Buyers were after the social ritual. Value from such intangible sources could never be simulated successfully on the web.

4.6 THE ORIGINS OF VALUE AND EVOLUTION OF BUSINESS MODELS

Chapter three reviewed the evolution of strategy driven by competitive behaviour in traditional markets. With the advent of the internet, markets have undergone changes and created new opportunities for value creation. Business models became popular as vehicles of value creation. Value is embedded in virtual markets, which have brought with them the potential for creating value from non-traditional sources. Such value is created by new products and services, from opportunities in environmental changes such as Schumpeterian innovation, transaction cost economics, a firm's value-chain, the resource-based creation of value in the firm and strategic networks. The Oxford Dictionary (1988:1187) defines value as something having worth and utility, and being desirable. It is the amount of money or other commodity for which an entity can be exchanged in an open market. Value implies something of high esteem, greatly prized or of importance.

Virtual markets are considered by Amit and Zott (2001:495) as “the settings in which business transactions are conducted via open networks based on the fixed and wireless internet infrastructure.” Characteristics of such markets, and their literature source, are:

- High connectivity (Dutta & Segev, 1999);
- A focus on transactions and efficiencies (Balakrishnan, Kumara & Sundaresan, 1999);
- A knowledge of the importance of information goods and networks (Shapiro & Varian, 1999); and
- High reach and richness of information (Evans & Wurster, 1999).

Reach refers to the number of people and products that are reachable quickly and cheaply in these virtual markets. Richness refers to the depth and detail of information that can be accumulated, offered, and exchanged between market participants. The trade-off between richness and reach generates asymmetries of information. This implies that differences in knowledge between people and companies affect their bargaining power, seen for example between the seller of a used car and the buyer. The fact that the internet is ubiquitous, causes such asymmetries to disappear. Large numbers of people can now share rich information (Evans & Wurster, 1999). Virtual markets have unprecedented reach because they are characterised by a near lack of geographical boundaries and networked players. Earlier in this document the internet was described as an electronic network with open standards. These characteristics

have stimulated the emergence of virtual communities and commercial arrangements that disregard traditional boundaries along the value-chain. Certain business processes can be shared among firms from different industries and in vastly different geographical locations.

There are other characteristics of virtual markets that affect how value-creating economic transactions are structured and conducted. These include the ease of extending a product range to include complementary products, improved access to complementary assets, new forms of collaboration among firms, the potential reduction of asymmetric information among economic agents through the internet medium, and real-time customisability of products and services.

Samler (1998) notes how industry boundaries become porous as value-chains are redefined. This in turn may affect the scope of the firm, as opportunities for outsourcing arise in the presence of reduced transaction costs and increased returns. Many companies now find it economically viable to outsource their IT services. Most South African insurance and financial institutions are examples of this phenomenon.

According to a recent survey, the cost of sending one trillion bits electronically has, over the past 30 years, dropped from \$150,000 to \$0.12 (Economist, 2000:6). This fact, coupled with the emergence of virtual markets, has profoundly changed the way companies operate and structure economic exchanges. New opportunities for wealth creation have been created. The study of value creation began in the mid-1930s.

4.6.1 Transaction cost economics

In a study to determine why firms internalise transactions that might otherwise be conducted in markets, Coase developed a theory of transaction cost economics (Coase, 1937; Madhok, 2002). A transaction occurs when a product or service is transferred across a technologically separable interface, or when one stage of processing terminates and another begins (Williamson, 1983). The value creation from cost reductions occurs through transaction efficiencies. Organisations that economise transaction costs can be expected to extract more value from processes. One of the main effects of transacting over the internet, or in any highly networked environment, is the reduction in transaction costs it engenders. Internet transaction costs include “the time spent by managers and employees searching for customers and suppli-

ers, communicating with counterparts in other companies regarding transaction details ... the costs of travel, physical space for meetings, and processing paper documents, as well as the costs of production and inventory management” (Amit & Zott, 2001:499). In an almost parallel development, technological change was also identified as contributing to value creation.

4.6.2 Schumpeterian innovation

The theory of economic development and new value creation through the process of technological change and innovation was observed by Schumpeter in 1934. He viewed technological development as discontinuous change and disequilibrium resulting from innovation (Schumpeter, 1934). He identified several sources of innovation (value creation), including the introduction of new goods or new production methods, the creation of new markets, the discovery of new supply sources and the reorganisation of industries. His notion of “a wave of creative destruction” (Becker & Knudsen, 2002) was developed after noting that certain economic rents, or income streams, become available to entrepreneurs following disruptive technological change. These diminished once the innovation has become an established practice. An example of creative destruction is typified by the impact that eBay, the online auction site, had on the traditional antique industry. The impact of eBay’s disintermediation led to the closing of traditional auction businesses and created the need for them to find new and innovative ways of trading in these products. “The most resourceful [of the dealers] began installing [computers] on their premises and listing the contents of their stores on eBay” (Cohen, 2002:109).

Schumpeter highlighted the contribution of individual entrepreneurs and placed an emphasis on the innovations and services rendered by the new combinations of resources. In his theory, innovation is a source of value creation. He emphasises technology and novel combinations of resources as the foundations of new products and production methods. These, in turn, lead to the transformation of markets and industries, and hence to economic development. New opportunities for value creation and virtual markets are modern results of creative destruction. These markets broaden the concept of innovation, since they span firm and industry boundaries, involve new exchange mechanisms and unique transaction methods, and foster new forms of collaboration among firms. Innovation is a driving force behind the development of new and established markets. It may, however, not be the only source of value creation in virtual markets.

4.6.3 Porter's value-chain

In the mid-1980s, Porter published a framework analysing value creation at the organisational level. He defines value as “the amount buyers are willing to pay for what a firm provides them. Value is measured by total revenue. A firm is profitable if the value it commands exceeds the costs involved in creating the product” (Porter, 1985:38). His analysis begins by identifying activities of the firm together with their concomitant economic implications. It includes defining the strategic business unit, identifying critical activities, defining products, and determining the value of an activity. The value-chain framework addresses the activities a firm should perform. It identifies the configuration of the firm's activities that enable it to add value to its products and compete in its industry.

Value-chain analysis concentrates on the primary activities having a direct impact on value creation, and support activities affecting value only through their impact on the performance of the primary activities. He posits that value can be created by differentiation, through activities that lower buyer costs or raise performance. The drivers of product differentiation, and hence sources of value creation, are policy choices, linkages within the value-chain, or with suppliers and channels, timing (of activities), location, sharing of activities among business units, learning, integration, scale and institutional factors. He maintains that information technology creates value by supporting differentiation strategies. The value-chain analysis has been found to be more appropriate in production and manufacturing firms than in networked businesses (Stabell & Fjeldstad, 1998). They find that the value-chain concept does not fully capture the essence of value creation in service firms. Rayport and Sviokla (1995) advocate the existence of a “virtual value-chain” that includes a sequence of gathering, organising, selecting, synthesising, and distributing information. This revised concept corresponds better to the realities of virtual markets and in particular to the importance of information (Shapiro & Varian, 1999). These authors propose that e-business value creation can result from combinations of information, physical products and services, innovative configurations of transactions, and the reconfiguration and integration of resources, capabilities, roles and relationships among suppliers, partners and customers. In the early 1990s, a perspective was forming that viewed value creation as the result of the application of the unique competencies which the firm had acquired over time.

4.6.4 Value from the resource-based view of the firm

As discussed in chapter three, the RBV views the firm as a collection of resources and capabilities, which by carefully marshalling and deploying, can create value. Such resources are scarce, durable, not easily traded and non-imitable. (Barney, 1991). Firms differ in terms of the resources and capabilities they control, until some exogenous change (or Schumpeterian shock) occurs. Virtual markets open up new sources of value creation by exploiting relational capabilities and complementarities between a firm's resources and capabilities (for example, between online and offline capabilities). Such markets challenge RBV theory. Information-based resources and capabilities receive a higher degree of mobility and thus increase their importance within e-business firms.

Each of the above theoretical frameworks makes valuable suggestions about possible sources of value creation. Some of the insights are the results of entrepreneurship and strategic management research. Value drivers raise the question of precisely which sources of value are of particular importance in an online business, and whether such entities can be identified in the context of the business. Each theoretical framework also has limitations when considered in the context of highly interconnected electronic markets (Amit & Zott, 2001:500). These authors maintain that this reinforces the need for the identification and prioritisation of the sources of value creation. In networked economy firms, business models function as important sources of value creation.

4.7 THE CONTEXT OF THE BUSINESS MODEL

There are two ill-founded beliefs among internet-spawned firms. The first is to regard the traditional process and content of business strategy as no longer relevant, and the second is that a good business model assures longevity. For most of the last century, a well-crafted business strategy delivered successful competitive advantage. There are those who maintain that this may always be the case. For firms in the networked economy, it is suggested that neither view is valid. It has been shown in this document that the advent of the internet and its concomitant technologies introduced irreversible and fundamental changes to the e-business domain. The study of strategy in chapter three revealed that although the contribution of strategy to the strategic architecture construct was positive, it did not explain all the variance in performance of electronic businesses. The remainder of this section will show the fallacy

contained in the second belief: Business models have factors to contribute, but alone, they cannot predicate successful performance in the firm in the networked economy.

A model is an abstract representation of reality. It defines a set of entities and their relationships, with or without qualitative or quantitative values. Generally, a business model is the description of a fit between the firm's resources and functions, and its environment. It is a contingency model which finds an optimal mode of operation for a specific situation. The evolving business model concept is derived from a quest for value creation, driven by environmental developments and infrastructural opportunities. An early form of corporate model, emphasising value from structural innovation, was the vertically integrated industrial firm featuring strong supply-chain hierarchies. For example, the first production-line motor manufacturer owned rubber plantations, and marine fleets for shipping products. Once computer and communications technologies became applied to business processes, transaction costs fell in sympathy (the contribution of Coase is discussed in Section 4.5). The response of business was twofold – process and structural innovations were adopted by management, resulting in new ways of producing, for example, through collaborative networks, and organising through outsourcing and forming virtual corporations (Tapscott, *et al.*, 2000:14-15). There are many definitions of business models in the literature.

4.8 DEFINITIONS OF BUSINESS MODELS

The business model, as a concept, is loosely defined. The literature reports that “there have been no attempts to provide a consistent definition for a business model in the internet context” (Mahadevan, 2000:2). Eisenman (2002) agrees that business models are widely used but rarely defined. Practitioners once resorted to using the term to describe a unique aspect of a particular internet business venture, but this practice has resulted in confusion. Timmers concurs and states “the literature ... is not consistent in the usage of the term “business model” and, moreover, often authors do not even provide a definition of the term.” (Timmers, 2000:32). The most frequently cited descriptions of business models are those of Timmers (2000), Amit and Zott (2001), Afuah and Tucci (2001) and Magretta, (2002).

This lack of an agreed definition amongst researchers and authors moves effective comparisons between protagonists from beyond being odious to the impossible. The characteristics of business models as found in the literature are therefore merely summarised in this section.

A business model is an architecture for product, service and information flows, including a description of the various business actors and their roles; a description of the sources of revenues; and a description of the potential benefits for the various business actors. (Timmers, 2000:31). In order to accommodate the marketing strategies and assess the commercial viability of the business model, Timmers includes the definition of a marketing model. He views the marketing model as a business model interlaced with the marketing strategy of the business under consideration. His concept depicts the content, structure and governance of transactions designed as to create value through the exploitation of business opportunities; it includes the design of:

- Transaction content – goods or services; resources or capabilities;
- Transaction structure – parties involved; linkages; sequencing; exchange mechanisms; and
- Transaction governance – the flow control mechanism (Amit & Zott, 2001:494-496).

Afuah and Tucci (2001:7) view the business model as the steps to be performed in order to complete transactions. Their business model is presented as a method by which a firm builds and uses its resources, and consists of components and linkages. It is a variation of the generic value-chain underlying all businesses, and has two parts:

- The business activities associated with making something, including processes such as design, procurement and manufacturing; and,
- The business activities associated with selling something, including the processes of customer identification, selling, transaction handling distribution, delivery (Magretta, 2002:4-5).

There are several other definitions (refer to the e-Factors report of the European Commission, 2002) including those of Weill and Vitale (2001) who see a business model as a description of the roles and relationships among a firm's consumers, customers, allies and suppliers that identifies the major flows of product, information, and money, and the major benefits to participants. Elliot (2002) suggests that a business model specifies the relationships between different participants in a commercial venture, the benefits and costs to each, and the flows of revenue. Mahadevan (2000) combines business models into a unique blend of three business critical streams:

- Value stream - which identifies the value proposition for the business partners and the buyers;
- Revenue stream - a plan for assuring revenue generation for the business; and
- Logistical stream - which addresses the supply-chain of the business.

Petrovic's (2001) business model concept describes the logic of a "business system" for creating value that lies behind the actual processes. Applegate (2001) defines a business model as description of a business that enables a study of its structure, the relationships among structural elements, and how it may respond in the real world.

The business model as a concept is still evolving and its incubator is highly complex and turbulent. It would be unwise to make claims of a definitive explanation or to opt for one single definition. It is also unnecessary in the context of this study. All that is required is a sufficient exploration of the concepts to permit the contributions from this field to be identified as suitable dimensions for the architecture construct. There is, however, a substantive difference between business models and strategy.

4.9 CONCEPTUAL DIFFERENCES: BUSINESS MODELS AND STRATEGY

In practice, the ill-informed, or narrowly focused entrepreneur of a new electronic venture may confuse the concepts of business model and business strategy. The preceding discussion showed a business model as explaining how an enterprise works. It approximates a value-chain as it includes a description of all the key business processes, the flow of products, services and information associated with these processes. It also describes the participants in the business venture, including the roles and relationships as well as transactions completed between the players. Competitive advantage, environmental conditions and ethos appear less significant in the business model concept. Thompson and Strickland (2001:4-5) view a business model as more focused than strategy and concerned with financial success, while strategy emphasises competitive initiatives and business approaches. Business models deal with viability.

Strategy defines the relationship between an enterprise and its business environment. Elliot (2002:7) suggests that business strategies specify how a business model can be applied to the market to differentiate the firm from its competitors. Magretta (2002:3) contends that "... the

concept of business model fell out of fashion nearly as quickly as the .com appendage itself.” According to this author, however, “... a good business model remains essential to every successful organisation, whether it’s a new venture or an established player.” Elliot and Magretta view business models as different from strategy. Strategy is concerned with competition. Strategy defines how a business organisation can do better than its rivals. Osterwalder and Pigneur (2002) maintain that business models are the link missing between strategy and business processes. They view business models as the linkage between the planning and the implementation level of a business. Their business model represents the architectural level of the business logic triangle, as is shown in Figure 4.3.

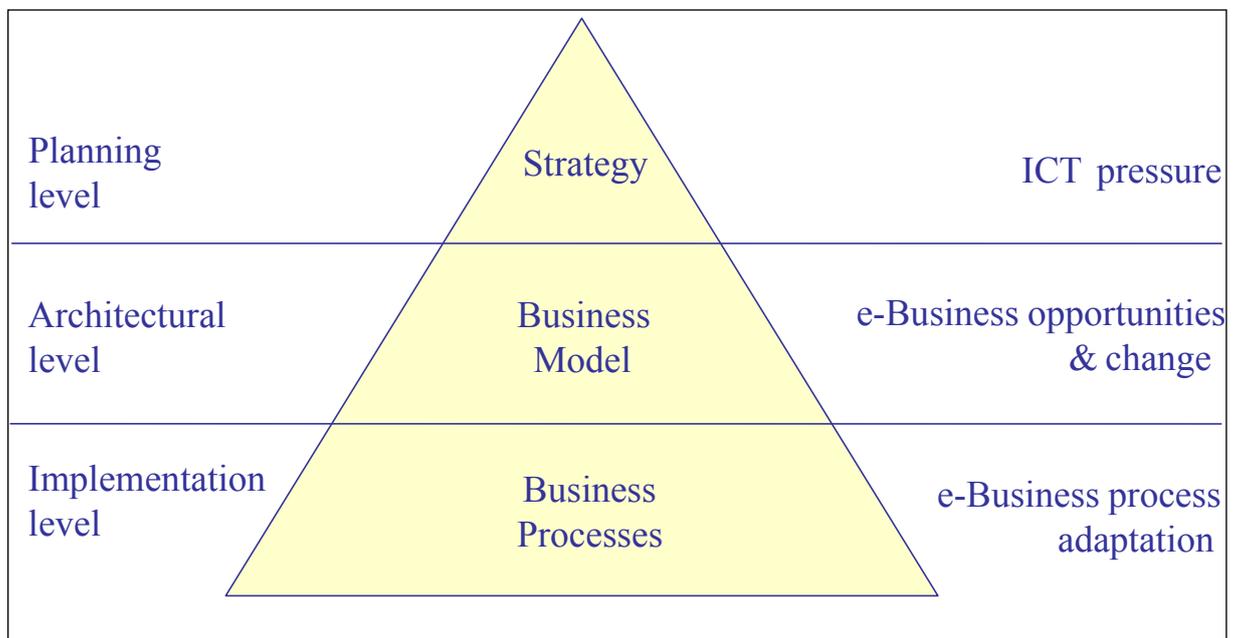


Figure 4.3: The business logic triangle

Source: Osterwalder 2002:2

The strategy (planning level) is perceived to be the level where a company defines and formulates its objectives and goals, whereas the business processes (implementation level) involve the appreciation and implementation of this information. In this context, a business model is the conceptual and architectural implementation (blueprint) of a business strategy, and represents the foundation for the implementation of business processes and information systems. Interpreting strategy as being performed in a specific place in an organisation, is out-dated and a simplification. Strategy is happening everywhere. Researchers are finding strategy happening as an activity at the micro-level in networked economy businesses (Johnson, *et al.*, 2003). Interestingly, the concept of architecture as a blueprint with definite levels begins to

suggest that the strategic architecture, as defined in this study, could be similar in nature and hierarchy to these authors' notion of a business model. The varied and general interpretations of business models as a concept, however, preclude the use of this term in place of "strategic architecture" in this study.

As new business models result in new practices, these affect the behaviour of individuals, and lead society as a whole towards new business practices and innovative products. New business models are expected to influence peoples' everyday life as much as they will affect work and employment; as such they should play an important part of management's strategic planning.

The typology of Whittington, discussed earlier (refer to page 43), identified four perspectives of strategy (namely the classical, evolutionary, processual and systemic). This taxonomy is applied to the concept of business models to examine its role in the process of business strategy. Of the four approaches, the systemic one is most sensitive to the interrelationship of factors. It assumes that planning is possible in a complex environment, but, contrary to the proponents of classical strategy, it relates more to history and context. Timmers believes that "it is unlikely that a planned approach to strategy can be successful in the current stage of the internet. Instead experimentation is expected" (Timmers, 2000:176). This would be more in keeping with the processual or evolutionary approach. His research findings indicate that strategy development, particularly amongst the established B2B companies, was nearer to Whittington's approach. The emerging trend is along the line shown by the arrow, from systemic to processual, in Figure 4.4.

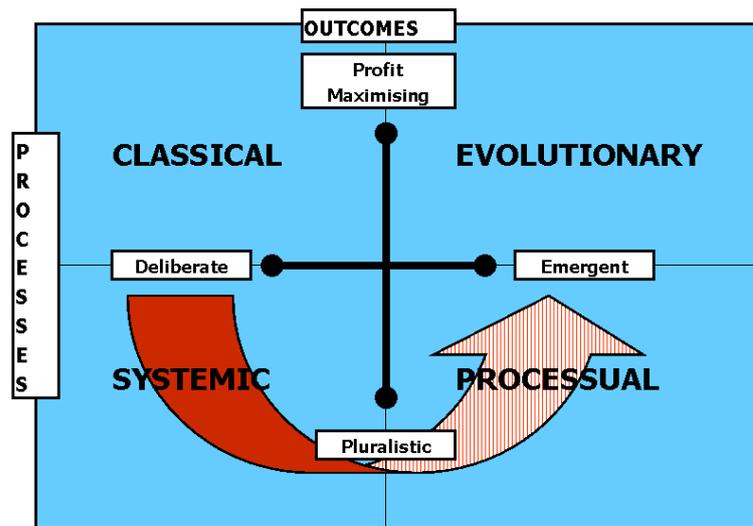


Figure 4.4: Trends in the development of strategy

Source: Whittington, 1993:3; Timmers, 2000:176

The arrow in Figure 4.4 reflects developments in established companies which are burdened by legacy systems. They may be forced to follow a systemic approach. If large telecom operators can break out of the classical strategy mould and into a processual approach, they could pursue several objectives simultaneously. The classical and evolutionary perspectives of Whittington, with their roots in traditional strategy, have less application in the turbulent, networked economy.

There has to be a fit between the environment, the strategy and the organisation. The internet business environment is turbulent, uncertain, risky and complex. It is characterised by rapid technology changes, growth and emerging competitors. These factors are identified by Ansoff (1987) and help to quantify the degree of turbulence in the business environment. In his framework for environmental analysis, turbulence ranges on the scale from repetitive – expanding – changing – discontinuous – surprising. He notes that discontinuous change is a key characteristic of the modern business environment rather than evolutionary change. This confirms the creative destruction proposition of Schumpeter, discussed earlier (refer Section 4.6.2). Where the turbulence level is high and change is discontinuous, Ansoff (1987) proposes that the appropriate strategic response is to be entrepreneurial and creative, rather than being based on precedents and experience. This seems to be a characteris-

tic of the current internet commerce world. An organisation needs to be organic and flexible, allowing for fast tactical reaction to safeguard immediate survival, and also allowing for organisational learning to capture benefits in the longer term. Flexibility (as dynamic pliancy) is considered later as a dimension of strategic architecture.

The entire foregoing analysis is aimed at enabling the identification of business model conceptual dimensions relevant to the construct of strategic architecture. Business models concern the value proposition of the firm, but there are many varied definitions and types which need to be further explored.

4.10 BUSINESS MODEL TAXONOMIES

A taxonomic approach to classifying strategy and business performance was discussed in chapter three. This perspective was thought to suffer from broad categories and being overly simplistic. These short-comings questioned its value in the evaluation of strategies for today's turbulent environment. Most writers agree that the concept of a business model in the present economy is in its early stages of evolution. A classificatory approach may have some shortcomings, but its application does simplify analysis and enable trends to be more readily discerned. Three taxonomies are most often cited in the literature. These taxonomies provide detailed, yet different perspectives. Tapscott, *et al.*, (2000) highlight collaborative business models, Timmers (2000) emphasises innovation and functional integration, and Rappa (2002) argues that the differentiating factor is the source of revenue or revenue streams. The first two models are conceptual while the last is functional. These approaches are discussed in more detail.

4.10.1 Business webs

In one of the first conceptual approaches to understanding business models, Tapscott, *et al.*, (2000:xi) identified four types of collaborative business networks, which they termed business webs. The classification was based on the axes of value integration and the locus of economic control over the value proposition. They later identified another sub-type, the distributive network. These types had always existed to some degree, but until the internet enabled reduced transaction costs they were too cumbersome to be recognised as models for creating economic value.

Business webs have distinctive features. They use internet technologies, deliver unique propositions, are multi-enterprise, have different classes of value contributors, including content providers and commerce service providers. Elements of “coopetition” (cooperation between competitors) are evident between players. Business webs are strongly customer-centric and knowledge-based.

Tapscott, *et al.*, (2000) identify five types of e-business models: the agora, aggregation, value-chain, alliance and distributive networks as shown in Figure 4.5. Their ideas are in many ways interesting, and this classification can be used to describe e-business formats that are strongly based on co-operative alliances such as intermediaries or infomediaries.

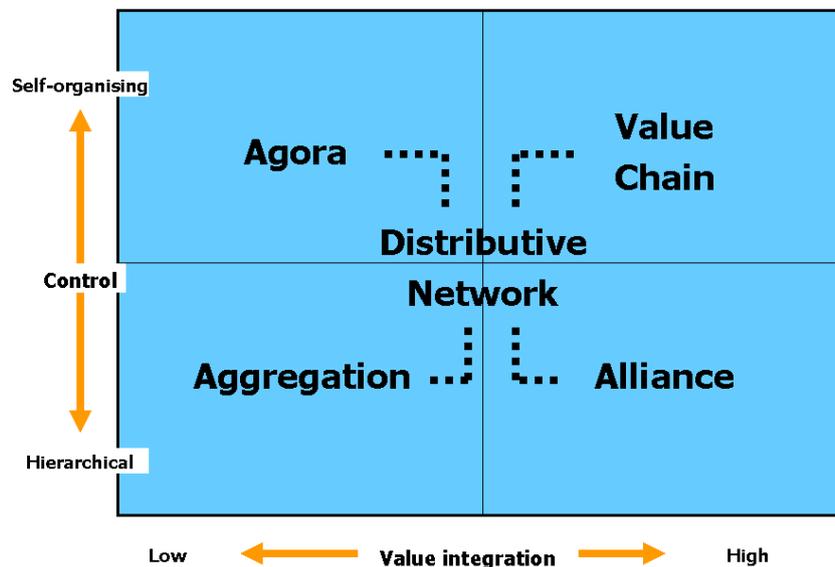


Figure 4.5: The business web typology

Source: Tapscott, *et al.*, 2000:28

The agora, based on the Greek word for place of congregation, or market, is largely self-regulating and low in value integration. The role of the customer is as market-player. More hierarchical in nature are the aggregators such as Amazon, Kalahari.net and eTravel.co.za. Their key features are selection and convenience, and the role of the customer is as buyer. A value-chain, such as Cisco or Dell Computer, is a more integrated model. The customer is the value driver, and the knowledge focus is network innovation and supply-chain management. The main theme of an alliance is creativity through networks. Organisations such as LINUX, America-On-Line or the World Wide Web Consortium, create collaboration webs in aid of

goals shared across communities of contributors. Their focus is on creativity, standards and community goals; their key process is innovation.

Distributive networks are those e-businesses that keep the economy alive and mobile. These logistical and infrastructural organisations include Telkom, courier services and the internet itself. Such networks exhibit characteristics of high and low integration (systems integrity versus unpredictable and diverse outputs) and can be both hierarchical, exhibiting tight network management, and self-organising as they respond to fluctuations in supply and demand (Tapscott, *et al.*, 2000).

The conceptual model of Tapscott, *et al.*, provides a theoretical basis for understanding and classifying typologies in more stable conditions. The web environment, however, is turbulent, often giving rise to rapid business transformations. Their classification is relevant at a point in time, but loses much in situations of dynamic change. Furthermore, the electronic business evolution is characterised not only by integration, but also innovation. Their dimensions do not adequately address this aspect.

4.10.2 Logistics as a source of revenue

Timmers' (2000) business model concept considers the organisation of product, service and information flows manifesting the sources of revenue and benefits for suppliers and customers. His model does not provide an understanding of how it contributes to business mission and objectives. His model needs to be combined with the knowledge of a company's marketing strategy in order to assess its commercial viability. He presents a systematic way of identifying architectures for business models based on a process of value-chain deconstruction and reconstruction. Deconstruction begins with identifying the value-chain elements, then determining interaction patterns and reconstructing business processes, either within each party or crossing the interaction between the parties as shared business processes.

Timmers maps business models along the two dimensions of the extent of innovation of the business model, or the degree to which the approach is an electronic version of the physical world business model; and the extent of the integration of information and functions in the value-chain. He has identified eleven generic business models, which are summarised in Table 4.2.

Table 4.2: Timmers' classification of business models

Classification	Prime activity
e-Shop (promotion)	Web presence – company promotion
e-Procurement	Electronic tendering and procurement
e-Mall	Collection of e-shops
e-Auction	Electronic bidding mechanisms
Value-chain service provider	Electronic payment and logistics
Virtual community	Specialist groups sharing information
Collaboration platform	Inter-enterprise collaboration
Trust services	Certification and other service providers
Information brokerage	Business opportunities
Third-party marketplace	Outsourced electronic marketing services
Value-chain integrator	Integrating multiple steps in the value-chain

Source: Timmers, 2000:35-40

His scale of innovation ranges from a simple electronic way of doing traditional business, as found, for example, in an e-shop, to highly different businesses developed from the opportunities provided by the internet. Functional integration ranges from single function business models, characterised again by e-shops, to the fully integrated functionality found in a value-chain integrator. The classifications of Table 4.2 are inserted on these scales as shown in Figure 4.6. Elliott (2002) has adopted a similar typological classification.

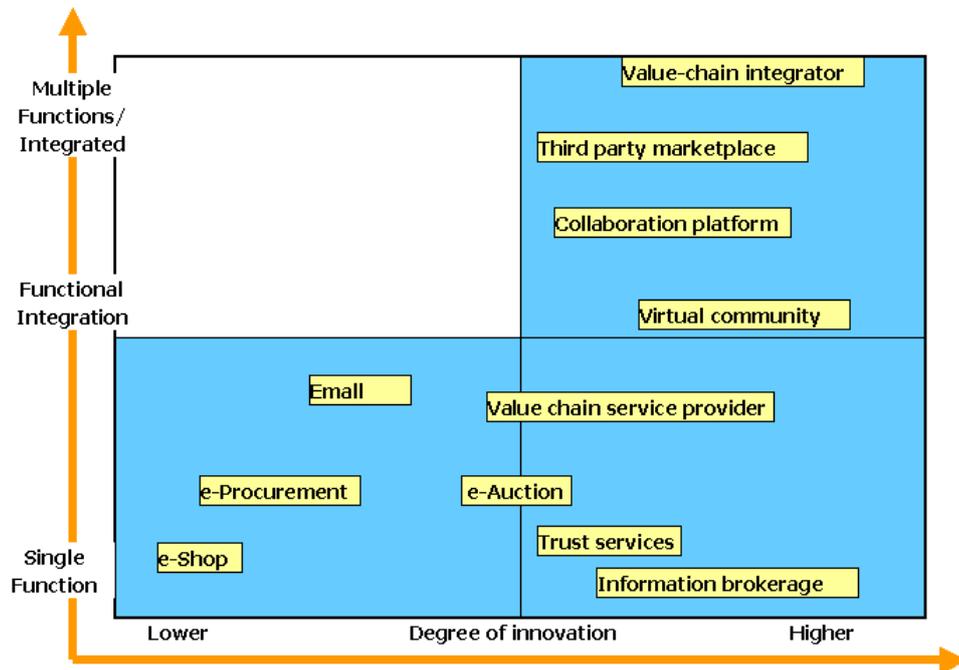


Figure 4.6: Integration-Innovation matrix

Source: Timmers, 2000:41

In the South African situation, it will be shown later, most e-commerce businesses still reside in the bottom left-hand corner. In the evolving domain of the business model, however, evolution follows two paths as depicted in Figure 4.7.

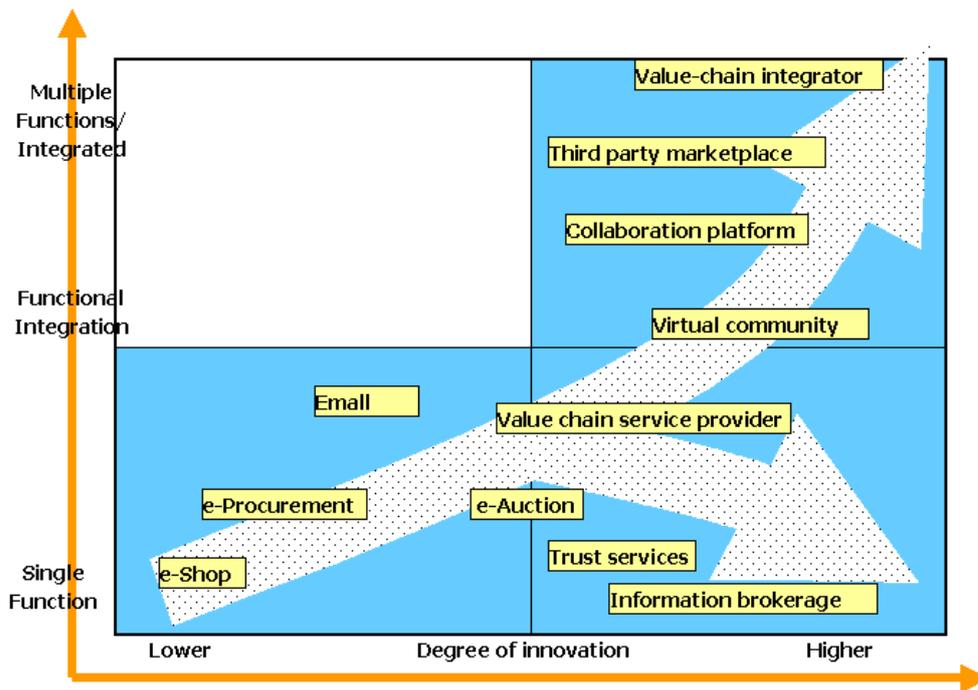


Figure 4.7: Timmers – business model evolution on the matrix

Source: Timers, 2000:41

The arrow in this figure shows the first trend emphasising a single function, but higher innovation businesses. Specialisation is found amongst information brokerages or trusted third-party services. Companies, once established, seek to generate additional value by offering related products or services. Many e-shops, for example, are upgrading their services by offering online payment and trust support. This phenomenon, although slower to be implemented in South Africa, is growing. An example is the establishment of Trust Online as a legal service.

The second trend, in Figure 4.7, shows how firms move upward in innovation and in integration. An example of this trend is the emergence of industry-wide, web-based procurement firms such as Quadrem and DNA Supply-chain. It is interesting to note from Figure 4.7 that the trend is fuelled by innovation. No business models are found to be low in innovation and high in integration. This observation finds support in the literature (Amit & Zott, 2001; Chesbrough & Rosenbloom, 2000; Gopalakrishnan, 2000; Hamel, 2000, and others).

This classification by Timmers uses innovation and integration as its two scales. These are external to the organisation. Tapscott, *et al.*, (2000) also looked outside the firm. There remains, however, a need for a classification based on the functional purpose of the firm. In Table 4.2 Timmers made a classification based on the prime activity of the firm.

Businesses with different functional purposes (for example, manufacturers *vis-à-vis* financial service providers) could be expected to have different business models. There remains the need therefore, to address the role of the functional purpose of the business in classifying business models. This is the approach adopted by Rappa whose categorisation is cited in the literature (Afuah & Tucci, 2001).

4.10.3 Functional typologies

Rappa (2002:1-6) views a business model as the way in which a company generates sustainable revenue. The business model spells out how it makes money by specifying where it is positioned in the value-chain. The models are implemented in a variety of ways; a firm may combine several different models as part of its overall business strategy. For example, it is not uncommon for content driven businesses to blend advertising with a subscription model. Rappa (2002:1-6) divides e-business models into nine functional categories as shown in Table 4.3. Each sources its income in different ways.

Table 4.3: Rappa – categories of business models

Function	Examples
Advertising	An extension of traditional media broadcasting model. Such firms are providing content in websites. These are the portals. Their income is from fees. Examples include M-Web, iAfrica and Yahoo.
Affiliate	Affiliates provide purchasing opportunities on affiliate sites. Amazon is a good example where its inclusion often occurs on the sites of others. The model is a pay-for-performance one.
Brokerage	Brokers are market makers, exchanges or distributors which bring buyers and sellers together. They include virtual malls, travel agencies and auction houses. Transaction broker PayPal is an example.
Community	The viability of the community model is based on user loyalty and emotion. Some sites are not-for-profit. Knowledge networks or expert sites are examples.

Function	Examples
Infomediary	These businesses, information intermediaries, collect data for example on consumer buying habits or website visits, and offer this information to businesses that use it for strategy purposes. Examples are Nielsens, and DoubleClick.
Manufacturer	These firms are able to reach customers directly, thus disintermediating the traditional distribution chain. Examples are Dell, Apple, and IBM.
Merchant	These are the e-tailers who are virtual merchants who rely on catalogues or reputation to attract business. Kalahari.net and Amazon are examples.
Subscription	Users pay a fee or subscription to receive content or services. Examples include content providers such as Financial Mail and CNN; and ISP's such as UUNet and M-Web.
Utility	Also known as the "on-demand" model, it is based on actual metered usage rather than the more common subscriber model. Some ISPs operate in this "pay as you go" way. iAfrica offered this option in their early days.

Source: Rappa, 2002:2-5

Rappa's taxonomy is strongly orientated towards the company's source of revenue. It provides a way to describe business cases in which a company has adopted a multi-model business format. This is relevant to those businesses which contain different forms of activity within a single website (internet portals often have multiple revenue channels). This typology forms the basis of one of the survey's control variables discussed later (refer to Section 6.8).

When evaluating the different taxonomies from the point of business model adoption factors, some taxonomies can be seen as more suitable, both from the point of identification of the factors influencing e-business model adoption, and from the point of case evaluations. The taxonomies of Tapscott, Timmers and Rappa encapsulate different perspectives. Timmers examines business models from the point of innovation and functional integration (Timmers, 2000). Tapscott evaluates different business models from the point of collaborative business webs such as portals, intermediaries, infomediaries (Tapscott, *et al.*, 2000). Rappa presents a view, where one eminent factor of separation is the source of revenue (Rappa, 2002). Expansion outside the firm boundaries are emerging. There is a trend towards a contingency approach, where alliances and networks of companies are established as and when needed.

There are competing trends towards tighter co-operation between competing value-chains. Business models have been further reduced in the literature to their individual components.

4.11 COMPONENTS OF A BUSINESS MODEL

The components of a business model reveal how firms structure and implement their business models in the networked economy. A business model shows how a firm plans to make money in the long-term. The various components must work together and have clearly defined linkages. As with the definition of a business model, there is a dearth in the literature of agreement on the key components of a business model. This section explores the analytical approach to business model components most frequently encountered in the literature. These inputs are later used when identifying the business model dimensions which contribute to the architecture construct.

Afuah and Tucci (2001) propose that business models consist of the components listed in Table 4.4.

Table 4.4: Components of a business model – Afuah and Tucci

Component	Business model dynamics (strategy)
Customer value	Differentiation or low cost producer
Scope	Products or services; customers or market segments
Price	Dynamic pricing and offering alternatives
Revenue sources	The provision of networked economy, internet-based metrics
Connected activities	Value-chain linkages
Implementation	Strategy, structure, systems, people, environment
Capabilities	Resources which are tangible or intangible; Human competencies, abilities and capacity to turn resources into customer value and profits

Source: Afuah & Tucci, 2001:49

This summary is useful in that it relates the component of the model to the strategy employed by the business. Other business model components found in the literature are summarised in

Table 4.5 with the source and the components advocated by that author. The summary is grouped chronologically.

Table 4.5: A summary of business model components

Author	Business model components
Pasternack and Viscio (1998)	Global core Business units Services Governance Linkages
Kraemer, Dedrick, and Yamashiro, (2000)	Direct sales Direct customer relationships Customer segmentation for sales and service Built to order production
Mahadevan (2000)	A blend of the three streams: Value stream – for the business partners and buyers Revenue stream Logistical stream
Alt and Zimmerman (2001)	Mission Structure Processes Revenues Legal Issues Technology

Source: European Commission, 2002:18

There are several conclusions that can be drawn from this table where each author endeavours to link components of business models to business strategy. The findings, however, are general. Pasternack and Viscio (1998) in their work on the “centre-less” corporation, identify elements of corporate strategy in business models. Kraemer, *et al.*, (2000) combine the business model with information technology and business strategy. Mahadevan (2000) sees the need to incorporate various functional strategies. Alt and Zimmerman (2001) endeavour to integrate the components of business models with classical corporate strategy, and break the components of business model down further into specific elements as shown in Table 4.6.

Table 4.6: Elements of business model components

Mission	Structure	Processes	Revenues	Legal	Technology
Goals and vision	Actors and roles	More detailed view of the mission and structure	Sources of revenue - short-term medium term	With respect to the firm itself	In terms of the ongoing technological developments
Value proposition	Focus is on industry, customers and products	Indicative of the elements of the value creation process	Necessary investments in the short-term and medium term	With respect to the product or service	In terms of their impact upon the business model design
Perceived customer added value		Customer orientation	Business logic	With respect to the revenue model	In terms of its impact on the other business model elements
The product or service offering		Coordination mechanism		In terms of their impact upon the decisions on value creation systems	
The target group				In terms of their impact upon the revenue models	

Source: Alt & Zimmerman (in the e-Factors report of the European Commission, 2002:18)

One of the basic purposes of strategy is competitive advantage. This emphasis is missing from the components in Table 4.6. The e-Factors report of the European Commission (2002:19) identifies a contribution to the debate from a Norwegian author, Methlie (2001), who has developed a framework for a generic business model with the following components:

- Market maker – seller-driven, buyer-driven, or neutral;
- Direction of integration – horizontal or vertical;
- Strategy – focused; undifferentiated;

- Control model – mediator, agent, distributor or hierarchal;
- Service integration – supplier aggregator, supplier integrator, information integrator, customer integrator, value-chain and function integrator; and
- Forms of co-operation – market expansion, service integration, information integration, co-branding, competence partnership, infrastructure partnership.

Methlie's contribution is characterised and differentiated from the other approaches by including strategy in the business model framework. Osterwalder and Pigneur (2002) adopt a different definition to illustrate the workings of a business model. Their business model consists of four main pillars that encompass the product and service proposition of the firm in the market, the customer relationship that the firm maintains, the necessary infrastructure that could enable the firm to realise all the above, and the financial aspects of the firm. The structure is shown in Figure 4.8.

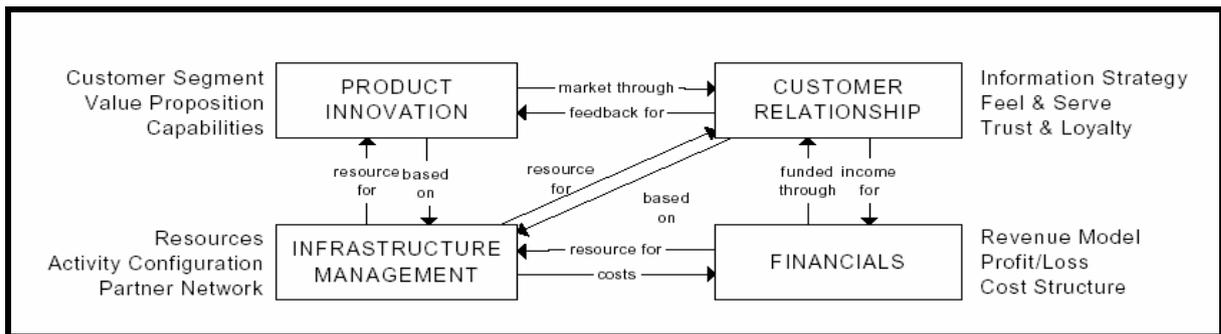


Figure 4.8: The pillars of the business model ontology

Source: Osterwalder & Pigneur, 2002:4

One approach, encountered in the information industry, views a model as a simulation of the real world. The concept of the business model, as in the context of this study, is not one that attempts to simulate reality; it rather endeavours to offer an explanation of business practice and contingency. In the IT field, business processes have been modelled, simulating information and data flows. Ward and Peppard (2002) describe the split of architecture into a business model and an information systems (IS) model. Their business model simulation is then broken down further into the business processes where processes are simulated, and the data model. The combination of the two approaches results in a process and entity matrix from which the various IT components of the firm are identified and for which computer systems can be developed. Such models depict the processes, activities and main information elements and their

inter-relationships, and make up the IS business model and, together with supporting IS models, comprise the IS architecture of the business.

The review of business models and their components reveals dimensions and components relevant to the strategic architecture construct. Business models are practical, but before these can be reviewed for their contribution certain factors contributing to their development need to be discussed.

4.12 PROMOTERS AND INHIBITORS

There are factors that promote or inhibit the successful performance of a given electronic business. Cost of implementation, security concerns, perceived customer non-readiness, lack of knowledge of IT and e-business, lack of executive support, and concerns regarding the reliability of technology are some of the inhibitors discussed in the literature (Chatterjee, Grewal & Sambamurthy, 2002; Nambisan & Wang, 1999; Iacovou, Benbasat & Dexter, 1995; Poon & Swatman, 1999; MacKay, Reich & Gemino, 2002). Practice has shown that some hurdles for electronic business adoption may be barriers for some companies and accelerators for others (European Commission, 2002). Results from the identification of factors influencing e-business model adoption, can be grouped by thematic priority area. Most of these items are based on the findings of larger firms.

Adoption amongst smaller firms remains low. In a study on internet adoption in the small, medium and micro sectors of the economy, Poon and Swatman (1999) find internet commerce still to be in its infancy in the small business sector, although the use of email is becoming more popular. The uptake of internet-based financial transactions is slow and there is little integration between the internet and internal business applications. They expect expansion in this sector only once small firms actually experience tangible future benefits. These findings are similar to those found in a study into the adoption of electronic data interchange processes by small and medium businesses in Canada (Iacovou, *et al.*, 1995). Adoption of business models can also be influenced by industry structure, but to different degrees. Internet usage within an industry sector is also reflected by the nature of its consumer.

4.12.1 Technological factors

Technological factors are the commonly recognised and analysed part of the electronic business adoption process (European Commission, 2002). These factors are dictated by external issues such as the state of technology development, user preferences and expectations and competitive environment. In practice, a prime concern for an e-commerce business is the functionality of its web-related services, affected by the alignment with market requirements. The key technological factors include interoperability and interconnectivity, enterprise resource planning and customer relationship systems, integration, security and electronic identification, transaction and payment systems, and scalability. Other factors include ideas for technology development, implementation and application which relate to the organisational climate, and human resource practice. People adopting innovative technologies may provide the measure for organisational cohesion. Some important factors include the propensity for trust, individual differences (cognitive and physical) as well as an individual's background, environment and past experience. Many of these inhibitors relate to the responsiveness of systems.

Spontaneity describes an event that occurs as a natural inclination or impulse. Many of the technological inhibitors discussed above are not necessarily related to possession of the infrastructure. The problems are possibly more appropriately attributed to the lack of spontaneity in the information technology or systems.

4.12.2 Organisational factors

The adoption and successful performance of electronic business is inherently associated with the ways in which single business firms, or networks of collaborating firms, conduct business. The categories of organisational factors stem from reasons for business model failure. The seven factor categories that are identified in a recent study (European Commission, 2002:6) are products and services, markets and customers, efficiency, management and structure, organisational culture, resources and capabilities, and partnerships. These factors contribute to the dimensions of business models.

4.13 BUSINESS MODELS AS A SOURCE OF CONSTRUCT DIMENSIONS

The preceding discussion provides the background for a process in which the characteristics of business models begin to be synthesised into dimensions suitable for the measurement of the strategic architecture construct. The process is dynamic, and the dimensions will be refined in the light of further revelations as the literature study progresses.

Economic innovativeness considers the business model as a determinant of successful economic performance. As shown earlier in this chapter, the economic landscape with the recent introduction of new economic drivers, has changed the rules for effective management. Technology and connectedness characterise the networked economy. Success in this environment requires different approaches to strategy, and hence to organisation structure. The firm needs to adapt its business model accordingly. This dimension is based on economic considerations which also principally encapsulate the work of Timmers (2000:41), Tapscott, *et al.*, (2000) and Rappa (2002). Innovation, in this context, reflects how different the structure of an online venture is from its offline counterpart. Integration captures how its functions are integrated in order to create a profitable customer proposition. As e-commerce firms advance along the innovation-integration ladder, so value is created, for example, by lower transaction costs and shortened value chains. This dimension also captures the inimitability of a firm's core competencies as discussed in the resource-based view of strategy.

While the previous dimension is a measure of the external behaviour of the firm, it does not, for example, capture the Schumpeterian (1934) benefits which may accrue to the firm. Being an early adopter, or being first to market, can deliver additional benefits. The dimension of **macroeconomic positioning** has its origins in the framework of Porter (1980) where income streams are generated by the position of the firm in an industry. In the early stages of the internet, for example, simply being described as a "dot.com", generated enormous, although short-term, investor benefits (Kanter, 2001a). The items in this dimension are based on the work of Schumpeter and mediated by the positioning-based view of Porter, as discussed in chapter three. This dimension also measures how well the firm adapts its business model to create value by capitalising on market asymmetries (Evans & Wurster, 1999).

A business model includes value creation through alliances. The dimension of **value creation potential** captures the impact of benefits from strategic cooperation. Its measures are based on the work of Timmers (2000), Amit and Zott (2001), Tapscott, *et al.*, (2000), Magretta (2002), D'Aveni (1998) and Welborn and Kasten (2003).

There are two characteristics most frequently encountered in the literature: market exploitability and customer centrality. The need for effective **market exploitability** has its origins in the work of virtually every authority on business models. This dimension captures the firm's ability, through its business model, to source revenues from market imperfections created by friction, pricing policies, elasticity, menu costs and price dispersion. In this study it is combined with the need for innovativeness as found in the work of Hamel (2000). Market exploitability must be reflected in the business model of the firm.

Another common feature of successful performance encountered in the literature, is **customer centrality**. Keeping the customer central in every function is a fundamental, discerning characteristic of successful online firms. This is an aspect, commonly encountered in all business model definitions and components (refer to Table 4.5 and Table 4.6). This attribute, customer centrality, of the business model transcends functional boundaries. It is encountered in the work of almost every author working in the field of electronic business, and is most distinctly encapsulated by Hax and Wilde (2001b), Seybold and Marshak (1998), Chatterjee and Segars (2002), and Evans and Wurster (1999). Customer centrality is measured in this study by management attitudes. This dimension includes the richness and reach of the firm's offering, and its ability to raise switching costs that promote customer lock-in.

The dimension of **disintermediation** measures the ability of the firm to find value by creatively exploiting its value chain relationships and linkages. It characterises the business models of successful firms, such as eBay (Cohen, 2002), and has become common amongst the more astute firms in the United States, as found in the work of Chatterjee and Segars (2002). A business model normally includes the supply chain and customer value chain (Chaffey, 2002). Another defining characteristic of successful firms is their ability to create value by shortening the value chain thus disintermediating various external operations. The origin of this dimension is rooted in disintermediation, which, since it requires a certain amount of wisdom, may also be a function of firm maturity.

The networked economy presumes the ubiquitous application of internet technologies which form the basis of the **communications infrastructure**. As discussed earlier in this section, this characteristic is inherent in the business model of every networked economy firm. What remains to be measured, however, is not merely the existence of such technologies, since this does not differentiate between businesses, but how the technology is applied. This dimension relates to the ability of the firm's business model to benefit from information and communication technologies.

Each dimension has several associated measurement items – some of which are shown in Table 4.5 and Table 4.6. These items may be incorporated in the final questionnaire. The strategic architecture construct is conceptualised in terms of these dimensions which are manifest in various forms and to different degrees in different organisations. The items have been extracted from the literature study and confirmed by observed best practice and the input of expert practitioners. Table 4.7 summarises the findings of this section. This table should not, at this stage, be considered definitive since the construct of strategic architecture is continuing to evolve in this document. Some dimension items may still change in the light of domain analysis and performance measurement, the subjects of the next two chapters.

Table 4.7: The dimensions of business models

Manifested in an organisation as	Can be measured by
Economic innovativeness the actual and desired position of the firm on an innovation-integration matrix	Present level of integration Present level of innovation Change in the firm's position on the Integration-Innovation Matrix Progress towards desired position Size of imitability window
Macroeconomic positioning the source and expected duration of Schumpeterian rents and the locus of the firm's value proposition	Revenue from industry developments Revenue from resource deployment Value proposition contribution Value from sources of market asymmetry
Value creation potential the level value flowing to the firm from integration, its transaction cost policy and alliances	Value from integration Value from cost savings Value from alliances Identified cost drivers
Market exploitability the firm's ability to source revenues from	Number of new products identified Basis of new products identified

Manifested in an organisation as	Can be measured by
market imperfections (friction, pricing, elasticity, menu costs, dispersion)	Number of new products sold Value from competitive strength
Customer centricity the firm's attitude towards customers, its richness and reach, its ability to raise switching costs and create customer lock-in	Identification and focus of target market Importance of richness Value in reach Customer switching costs Number of unique lock-ins Durability of customer lock-in
Intermediation the ability to find value by creatively exploiting its value-chain relationships and linkages	Change in the number of elements in the firm's value-chain
Technology infrastructure management the ability of the firm to profit from inimitable information and communication technologies	Number and value of complementors Change in number of complementors Use of proprietary systems

4.14 IN SUMMARY

This chapter explored the link between strategy and business model concepts in order to build further on the construct of strategic architecture.

In order to identify market characteristics, the analysis began by suggesting that changes in the economy have produced new driving forces that in turn challenge management to operate in ways that differ from the past. These developments demand new responses, especially from e-businesses, in their quest for effective competitive advantage. New forces have also opened new markets with novel opportunities. Electronic markets are free exchanges but exhibit characteristics that set them apart from conventional markets. Understanding these differences is necessary for analysing the evolution of business models. These markets are still evolving. Their characteristics include being frictionless and having low search costs, strong price competition and low margins. There is value stemming from the shortening of the value-chain through the process of disintermediation.

Business models have their origins in the creation of value. The dissertation continues by tracing the concept of value from Coase's theory of transaction costs, through Schumpeterian

rents from industry innovation, value-chain developments to value appropriated from the RBV of the firm. Business model definitions are presented, followed by the taxonomic approach of three authors towards their classifications, and finally after a review of the components of business models, the relevant dimensions are tabled. The next section completes a position of this dissertation, namely that strategic architecture dimensions are primarily sourced in strategy and business models.

CHAPTER 5

THE DOMAIN OF STRATEGIC ARCHITECTURE

5.1 INTRODUCTION

Business models have the creation of value as their central purpose. It is necessary to locate the locus of the business model within the firm, show its relationship with strategy and synthesise the previous concepts into a suitable construct.

From the previous chapter the definitions are discussed and the characteristics of business models revealed. In a similar context, in chapter three, strategy was shown to be the competitive effort and business approaches for pleasing customers, competing successfully and achieving organisational objectives. The conceptual relationship between the strategy and business models is summarised in Table 5.1.

Table 5.1: The concepts of strategy and business models

Concept	Strategy	Business model
Broad theoretical arena	Strategic intent	Value creation
Primary theoretical question	How to manage the “fit” between firm and environment	How to profit by leveraging relationships
Primary purpose	Sustainable competitive advantage	Creating and sustaining value
Primary domain of interest	Industry position and resource conversion	Alliances
Primary focus of analysis	Strategy design and implementation	Value network
Primary emphasis	Strategy process and content	Revenue

Concept	Strategy	Business model
Result	Sustainable profit	Value delivery and profit
Key ingredient	Management behaviour	Information technology
Optimises	Organisational processes	Logistics
Central theme	Maximising shareholder wealth	Optimal value proposition

This table has been developed from the literature previously reviewed. It summarises the relationship between business models and strategy. Strategy and strategic management, for a firm in the networked economy, is incomplete without an appropriate business model with its emphasis on customer value delivery and knowledge. In Table 5.1 business models intertwine with corporate strategy. One is not superordinate to the other. This study argues that, for successful performance in the networked economy, a business model *per se* is an inadequate prerequisite. Classical strategy on its own does not suffice either. The fusion of strategy with an effective business model, as advocated in this dissertation, forms the strategic architecture of a firm and that becomes the fundamental *sine qua non* for success.

One of the early proponents of strategic management was Chandler (1962:13). He gave rise to the discussion on the formulation of strategy and its implementation. Since then, the debate over the segregation of strategy content information, as formulated by management and implementation by the whole organisation, has persisted as one of the defining characteristics of the prescriptive schools of strategic management thought (Mintzberg, 1990:111). More recent perspectives on strategic management emphasise a greater overlap and interplay between strategy formation and the implementation process. Within such perspectives, the strategy actually achieved by an organisation is seen as emergent and adaptive over time, contemporaneous with its implementation (Mintzberg & Waters, 1985). Two important issues in the making of strategy can be identified – be forward-looking and dynamic (Hamel & Prahalad, 1996a; Hamel & Prahalad, 1994). It is no longer appropriate to compete simply on the basis of today's markets and current resources, but rather “organisations need to be continually pushing back and colonising their own competitive frontier” (Littler, Aisthorpe, Hudson & Keasey,

2000:413). Secondly, strategy formation should not be confined to the top of the organisational pyramid, but should rather enjoy a much wider constituency of participants in order to maximise the creative and informational input (Simons, 1995; Hamel & Prahalad, 1996a; Johnson, *et al.*, 2003). The application of the strategy-sourced dimensions adequately addresses the desired futurity of the architecture construct. The component of dynamism, reflecting business response to the turbulence in its domain, remains to be discussed.

5.2 DYNAMIC CAPABILITY

The resource-based view of the firm is one theoretical framework for understanding how competitive advantage is achieved and sustained. It conceptualises firms as bundles of heterogeneously distributed resources, whose distinctive differentiators persist over time. Researchers have extended the RBV to dynamic markets (Teece, Pisano & Shuen, 1997) with the rationale being that RBV has not adequately explained how and why certain firms have competitive advantage in situations of turbulence such as those prevailing in the networked economy. In market conditions such as these, a dynamic capability is the ability of management to “integrate, build, and reconfigure internal and external competencies to address rapidly changing environments” (Eisenhardt & Martin, 2000:1106). These authors further maintain that, since manipulation of knowledge resources may impact upon behaviour in such markets, over-dependence on resources can increase vulnerability. This is especially so, they say, in the prevailing economy where management are challenged to remain competitive.

Eisenhardt and Martin (2000:1107) suggest the existence of dynamic capabilities within the firm. These are the processes that use resources to match and create market change. They are the organisational and strategic routines by which firms achieve new resource configurations as markets evolve. Effective dynamic capabilities in turbulent markets are simpler than those in less dynamic markets. These routines have few rules restricting managers or indicating priorities (Eisenhardt & Sull, 2001). The authors find that simplicity ensures focus on broadly important issues without locking them into specific behaviours, or the use of past experience that may be inappropriate given the actions required in a particular situation. Specific strategic and organisational processes include product development, alliancing, and strategic decision-making.

In virtual markets where industry structure may be blurring, dynamic capabilities take the character of simple, experiential processes that rely on quickly created new knowledge and iterative execution to produce adaptive outcomes (Eisenhardt & Martin, 2000). Learning mechanisms guide their evolution. Dynamic capabilities are necessary, but not sufficient conditions for competitive advantage in these situations. They can be used to enhance existing resource configurations in the pursuit of long-term competitive advantage. They are used to build new resource configurations in the pursuit of temporary advantages.

The manifestation of the dynamism dimension, or the existence of processes or routines for matching resources to markets and create market change, can be measured in an organisation. Dynamism is typified where evidence exists of investment in resources supporting business flexibility. Such resources include managing risk, maintaining multi-skilled staff and the presence of routine practices that enable the business to change direction with minimal disruption (Johnson, *et al.*, 2003).

The dimension of market exploitability relates to the firm's ability to source revenues from opportunities and imperfections in digital exchanges and markets. In the light of the foregoing, the items that may be included to measure this dimension, are analytical thoroughness, marketing orientation, pricing, niches and developing a dependent community.

Dynamic capability is henceforth combined with the ability to exploit market niches which together define the dynamically pliant organisation. Pliancy refers to something easily bent or flexed. It is the readiness to be altered, modified or moulded to fit conditions. A dynamically pliant organisation is one that is adaptable and can readily yield to take full advantage of market, technology or environmental influences. Dynamic pliancy is the dimension of strategic architecture that reflects dynamic capability. This perspective contributes in this form to the research construct. Futurity, instinctive responsiveness, agility and pliancy are some of the determinants that predicate success. Still lacking, however, is the dimension that effectively reflects the characteristic of successful networked economy ventures that convergently align all their strategies and behaviour into one coherent whole (Chatterjee & Segars, 2002; Hax & Wilde, 2001a; Kothandaraman & Wilson, 2000; Weir, *et al.*, 2000).

5.3 THE DIMENSION OF HARMONY

The information systems (IS) literature emphasises the need for the alignment of information systems goals and strategies with organisational goals and strategies. Alignment is a dominant theme in much IS research (Chatterjee & Segars, 2002; Norton, 2002; Khandelwal, 2001; Van Der Zee & De Jong, 1999). Such writings have provided a conceptual foundation for information systems strategy, integrated information systems strategic frameworks (Henderson & Venkatraman, 1993), competitive advantages from information systems (Venkatraman, 1994), information systems success sustainability factors (Kettinger, Grover, Guha & Segars, 1994), and buyer-seller strategies in e-commerce (Grover & Ramanlal, 1999). There has been much theorising, but, as Ragu-Nathan (2001:266) states, “comprehensive and validated instruments of strategy that would permit empirical testing of these theories are scarce in the literature.”

Prior to 1990, the information technology function tended to be viewed and managed in a business as a cost centre, often with accounting criteria used to manage and measure efficiencies (Ward & Peppard, 2002). This gave rise to steering committees and ad-hoc policies instituted for the control of the information technology infrastructure and data repository. In contrast, information is today viewed as a strategically valuable resource. This role adds additional challenges for management. For example, in order to manage risk, failure is now tolerated and innovation nurtured. This redefined relationship has led to calls for a closer alignment, not only of technology objectives, but all functional plans with business objectives in the concerted drive for sustainable competitive advantage.

Alignment has not been restricted to the IT arena. The development of effective competitive behaviour has lifted management’s focus from an operational to a strategic orientation, and created the need for management to develop strategies where resources can be better assimilated into the firm’s operations. Effective business strategy implementation demands functional strategies that are well integrated and coordinated. Frenzel (1992:76) proposes that alignment of goals and strategies with the corporate goals and strategies be regarded as a critical success factor, especially for the information-reliant organisation.

With the changing role of information management, leadership, organisation design and management processes may also change. To fully realise the competitive advantages created by

the strategic use of information, organisations must have appropriate systems management strategies that fit in with their culture, technology status, and business strategy. For electronic commerce firms in the networked economy, information systems are a strategic resource. Equally valuable is the vision of the founder, chief executive officer or charismatic leader. This fact is supported by studies of firms, particularly in the early growth phase of their life-cycle (Easton, Brown & Armitage, 2001; Goldberg & Sifonis, 1998; MacKay, *et al.*, 2002). Alignment is an input. It is a means proposed for achieving harmony within the firm.

Harmony, or harmonious, as defined in the Oxford Dictionary, is a consistent, orderly, pleasing or agreeable whole, free from dissent or ill-feeling (1988:455). It is the outcome of successful organisational alignment. Vision plays a prominent role in the performance of new e-commerce ventures. Three examples typifying the role and value of vision are Thawte Consulting (founder: Shuttleworth), e-Bay (founder: Omidyar) (Cohen, 2002) and Amazon (founder: Bezos) (Afuah & Tucci, 2003:225). This strong, central theme harmoniously unites the organisation and orchestrates all the activities of the business. It appears to engender success and is a characteristic commonly encountered amongst the pure online businesses.

The dimension of harmony has its roots in configuration theory (Miller, 1996). “A configuration denotes a multidimensional constellation of the strategic and organisational characteristics of a business. Configuration theory postulates that for each set of strategic characteristics there exists an ideal set of organisational characteristics that delivers superior performance (Van de Ven & Drazin, 1985). Such configurations are idealistic since they represent “complex, interdependent and mutually reinforcing organisational characteristics that enable businesses to achieve their strategic goals” (Vorhies & Morgan, 2003:101). Miller views configuration as “a variable or quality that can create or destroy competitive advantage” (1996:506). It is a complex system of interdependencies reflected as “a quality or property that varies among organisations. It is the degree to which an organisation’s elements are orchestrated and connected by a single theme” (1996:509).

Harmony in this study is operationalised by the following items:

- A primary goal and its attainment is the focus of attention and resources;
- Consensus on objectives and means;
- Decision makers share clear priorities;

- Strategy, structure, process and culture, reflected in information, reward or appraisal systems, are shaped by the central vision and complement each other;
- Structure and composition of top management team reflect the focus;
- Hiring, reward and promotion practices are geared to supporting one primary function or talent; and
- Information systems and routines are customised in line with the central theme.

These items constitute the harmony dimension of the strategic architecture construct, which is now complete for the purposes of this study.

5.4 STRATEGIC ARCHITECTURE IN THE LITERATURE

Strategy in the domain of modern businesses must cope with dynamic change and turbulence. At the same time, effective strategy needs to be forward-looking and change-orientated (Hamel & Prahalad, 1994). Organisations must be responsive to changes within their current operating environments. The better they can predict such changes, the better they can identify and exploit future opportunities. Hamel and Prahalad (1990) posit a strategic management framework in which organisations pursue future competitive success through the re-invention of their markets and the deployment of core competencies. The formulation process through which an organisation translates its current core competencies into future competitive success, these authors term “strategic architecture” (Hamel & Prahalad, 1996b:117). Their concept is described as an “information road map” of the organisation’s progress towards its anticipated competitive ambitions, which may not be achieved for several years to come. Hamel and Prahalad (1996b:121) see strategic architecture as “a broad opportunity approach plan. The question addressed by a strategic architecture is not what we must do to maximise our revenues or share in an existing product market, but what we must do today, in terms of competence acquisition, to prepare ourselves to capture a significant share of the future revenues in an emerging opportunity arena.” Their road map not only emphasises the organisation’s destination, but also informs about the route necessary to achieve it.

Hamel and Prahalad’s method for formulating strategy content presents certain difficulties. Concepts which work well at a corporate level and generically between industries, by their own admission, may be difficult to translate into actual resource allocations in specific organisations (Hamel & Prahalad, 1996b:223). Management must be able to encapsulate and

institutionalise information about core competencies and future competitive ambitions in a tangible way if these are to be managed effectively. To form the basis of a shared dialogue about strategy and to improve strategic fit, strategic architecture must be communicated throughout the organisation.

Commenting on the Hamel and Prahalad concept, which requires “developing mechanisms for organisational learning, innovation and experimentation, constructive contention, empowerment, optimised value potential, corporate sustainability, and strategic re-framing”, Kiernan (1993:7) finds a dichotomy in whether the focus of strategy should be on industry dynamics and competitive structure, or on emerging customer and market needs. He perceives this as artificial and maintains that both factors are important together, but not sufficient for strategic success. Too much of an external focus runs the risk of “putting the strategic cart before the horse.” He defines internal strategic drivers as the components of strategic architecture, and strategic architecture as “that invisible intellectual, philosophical, and even normative ‘DNA’ which programs and lends coherence to virtually all important business decisions, whether they be strategic or operational” (1993:7). Kiernan defines it as “a series of overarching corporate priorities and values that form the enabling platform upon which specific strategies can then be built.” The strategic architecture construct of this study may use the words “strategic architecture”, but it is built along different lines, but with a similar objective.

5.5 THE CONSTRUCT OF STRATEGIC ARCHITECTURE

The concept of architecture has common usage in information technology (Morris & Ferguson, 1993). It has its roots in the field of classical architecture where, from a brief, the structural architect gleans what the client has in mind, and then develops drawings which are a transcription of the owner’s requirements depicting the final product from the owner’s perspective. Detailed plans follow, contractors are appointed and building commences. This process has information technology parallels (Zachman, 1999).

The term “strategic architecture” in the context of this study, is a complex construct derived to measure the competitive behaviour of a firm, either a pure online or hybrid, participating in the networked economy. It is a philosophy or orientation which reflects the attitude and behaviour of management in their quest for sustainable competitive advantage. The descriptor “orientation” is frequently encountered in literature (Loubser, 1999) but was considered to be

too ethereal for use in this work as it could convey insufficient emphasis on practical implementation. Figure 5.1 shows the relationships.

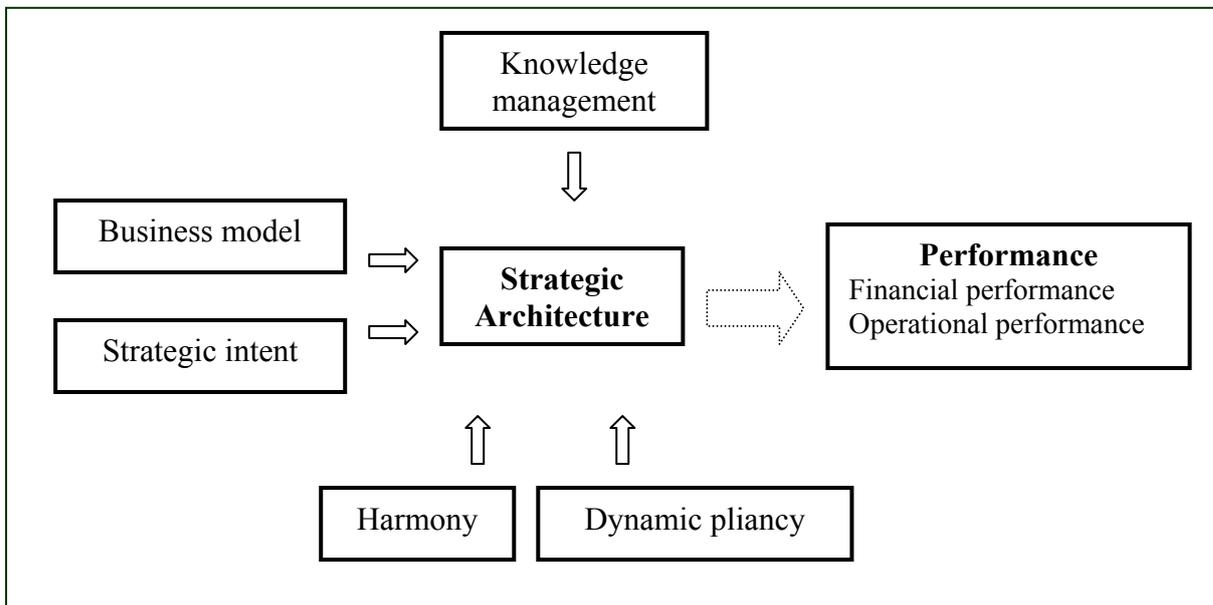


Figure 5.1: Strategic architecture and its relationship to business performance

This diagram shows the study's conceptual origin of strategic architecture. Business models give rise to the concept of value; strategy provides the strategic intent. Harmony, knowledge management and dynamic pliancy provide the other bases.

For the purposes of this dissertation, therefore, strategic architecture is defined for a firm competing in the networked economy, as *a philosophy of strategic intent and value creation necessary for a firm in striving to meet the practical and expressive requirements of its constituents. It is the creative design behind a value proposition and the total basis for a reasoned judgement of a business's performance.* It is the fundamental, intellectual, philosophical thread evident at all levels of a business, directing, aligning and delivering coherence in all important business decisions guiding corporate priorities and values, forming an enabling platform for business strategies.

The concept of threading has meaning in IT *patois*. In computer programming, a thread is a process that is part of a larger process or program. New operating systems and processors are designed to multi-thread. In the use of electronic mail and newsgroups, a thread is a series of messages and replies related by a specific topic.

There is a conceptual difference between strategic architecture, as propounded in this study, and the “normal” strategy of a business. The difference is hierarchical. The characteristics of value creation and associated strategic management behaviour are not simply an appendage to an existing strategy set. If this were the case, which functional division, department or manager would, for example, take responsibility for the customer proposition, value creation, harmony, or innovation? These basic propositions cut across functions. They exist in different forms in different areas of the enterprise. Strategic architecture, as in the construction industry, is the most fundamental of the building blocks of a business. As a building plan has relevance at a higher hierarchical level than its architectural foundation, so business strategy applies at a higher level than strategic architecture. This requirement has become more relevant recently for those businesses adapting to the demands of the networked economy. Similar in pervasiveness to organisational culture, strategic architecture exists as the foundation for all strategic management.

The connotation of an underlying structure or framework conveys an appropriate understanding to the meaning as used in the definition. Since the concept of strategic architecture is positioned at the confluence of strategy and business models, elements of both these disciplines contribute most to its components.

The differences between strategic architecture as proposed in this study, and the concept encountered in the literature, are summarised in Table 5.2.

Table 5.2: Conceptual differences in the strategic architecture concept

	Hamel and Prahalad (1996b)	This study
Concept	Process	Philosophy as in a motivating concept – a viewpoint and system of values
Origin	Possibly the result of semantic conjecture	Grounded in the literature
Perspective	“Opportunity approach plan”	Strategic intent and value creation
Focus	Implementation processes	Formulation and content
Conceptual basis	Market re-invention and core competencies	Strategy, business models, harmony, dynamic capability and knowledge management
Purpose	Management guide	Account for business performance in the networked economy
Object	All firms	Networked economy firms
Time horizon	“Action today”	Developing a permanent and dynamic strategic capability
Research construct	Not available	Architecture with 12 dimensions
Shortcomings	“Difficult to institutionalise”	Theoretical, to be tested in the empirical study
Conclusion	Concept has use with few citations in the literature (Littler, <i>et al.</i> , 2000).	May contribute to explaining performance of networked economy firms

Literature on corporate strategy focuses on factors external to the firm such as industry structure and dynamics and resources. Prahalad and Hamel (1996b) use the term strategic architecture in a different but complementary way to refer to “meta-strategies”, which guide the selection and pursuit of a few core competencies.

The study into the performance of networked economy ventures so far has identified 12 dimensions which are considered to suitably describe the construct of strategic architecture. The origin, content and structure of each dimension requires explanation.

The development of the construct is based on Section 4.13 and the discussion in the previous sections of this document. Some new dimensions are added, some are combined and a few have had the descriptions modified. Where there have been changes these are noted.

1 Futurity

Futurity is the existence of a desire by management to achieve a specific future for the business. Encapsulating the purpose of strategic intent, this dimension can be measured by the presence of a clear time horizon, how short-and long-term perspectives are balanced, the existence of management objectives, and the firm's overall strategic alignment. This dimension has its origins in strategy.

2 Customer centricity

Customer centricity means considering the customer central in every business purpose or transaction. It may be defined by attitudes towards customer bonding; customer-facing website and other front-end performances; after-sales service; measuring performance; establishing and maintaining high switching costs, discouraging customers from buying elsewhere; managing the relationship and eventually "locking in" the customer.

3 Macro-economic positioning of the firm in its industry

This dimension describes how the firm benefits from being positioned in the right industry at the right time. Some of the measures are benefits from Schumpeterian rents, market dominance, first-to-market attitude, cost strategy, process and product differentiation, the non-imitability of competencies and the degree to which competencies are visible to competitors.

4 Market exploitability

Market exploitability is the ability of the firm to generate revenues from intimate market examination and exploiting niches. It includes developing an appropriate business model and creating a dependent community, and evolves from thoroughness of analysis, the orientation of the firm and its pricing policies.

5 Economic innovativeness

As discussed in Section 4.13, e-Shops are not very different in nature, operation or structure from their offline counterparts. Economic innovativeness describes the “differentness” of an online venture from an offline business performing the same function. This dimension includes the value to the firm of the web and its technologies, degree of net-enhancement, organisational flexibility, structural innovation, web-based innovation, the degree of complacency and functional integration.

6 Interjacency

The strategic architectural dimension of interjacency is the ability of the firm to leverage value through intervention in the value- or supply-chains. Disintermediation is a specific case. This dimension includes how the firm benefits from shortening the value-chain and benefits from creating value through its strategic alliances. It goes beyond simple disintermediation, as discussed in Section 4.13.

7 Digital spontaneity and scalability

This dimension began as the need for finding some aspect of technology that demonstrated the outcome of an effective IT strategy as discussed in Section 4.13. Computer systems are indispensable to networked economy firms. It is the responsiveness of these systems, however, that undergirds performance. Digital spontaneity and scalability is the value created by the instinctiveness with which digital systems respond to demands of the business. These challenges include change, being proactive in systems implementation, and how the firm profits generally from information and communications technologies. Some items for measuring this dimension include the alignment of IT with business goals, systems availability, dependence on technology, IT research and development benefits, executive attitudes, management information system performance, investment criteria and asset utilisation.

8 Knowledge management

Knowledge management concerns how the firm uses this resource to create value. It reflects how the firm profits from knowledge networking. The evolution of data to knowledge is facilitated by adding value. The knowledge management dimension is operationalised by the presence of formal and centralised processes that facilitate collecting, storing and deploying key knowledge-based material; improving performance by the retention of key skills; inter-

organisational communications; a culture of knowledge sharing, and the location of knowledge within the business.

9 Innovative aggressiveness

Every networked economy firm has innovation as one of its dominant themes. The study sought to move beyond the simplistic existence of innovation policies by evaluating the degree of aggressiveness with which a firm pursues its innovation strategy. The origins are based on the work of Venkatraman (1989). Competitive advantage accrues from how much more aggressive a successful firm might be over its more complacent rival. The measures applied included the relative size of the research and development budget, management attitudes to innovation, measuring innovation outputs, institutionalising innovation through performance appraisal and incentive systems.

10 Equivocality

The term “equivocality” has its roots in the word “equivocal”, which means being open to several interpretations. Applied in this instance, it denotes a measure of the quality of management fortitude. Synonymous with ambiguity or ambivalence, it relates to the approach of management towards risk. An irresolute or equivocating management may delay or postpone decisions with an element of risk (refer to Section 3.9.6), which in terms of the demands of networked economy could prove unwise. This dimension includes the analytical ability of management, risk-taking, dealing with uncertainty and the setting of priorities. It includes management’s attitude, which may have special relevance for online ventures spawned by off-line businesses, towards legacy issues. The origins of this dimension are also based on the work of Corbitt (2000).

11 Harmony

Harmony is the product of a well-aligned business. Characteristic of many pure online firms, is the existence and quality of a uniting, central theme. It is operationalised by the presence of a vision and its success in uniting the business.

12 Dynamic pliancy

The dimension of dynamic pliancy, the ability of the firm to mould itself to the demands of its market, is characterised by the existence of resource-saving routines, and the flexibility and responsiveness of a business, as determined by management’s commitment.

5.6 CONSTRUCT OPERATIONALISATION

The operationalisation of the research construct – the measures and items – and their origin in the literature are summarised in Table 5.3. The questionnaire items have their origins in the earlier discussion and in the summaries of Table 3.4 and Table 4.7 and Section 4.13.

Table 5.3: The dimensions, source and measures of strategic architecture

Measure	Source	Questionnaire item
D1 FUTURITY (Seeking a desired future)		
Time horizon	Thompson & Strickland, 2001	In a business like ours it is important to have a vision with long-term perspective.
Time balancing	D'Aveni, 1998; Thompson & Strickland, 2001	Management focus too much on long-term viability and forget about daily survival.
Business futurity	Alt & Zimmerman, 2001; Andrews, 1980; Chaffey, 2002; Venkatraman, 1989	Top management have a reasonable idea of what our business and its environment will look like in 3 years' time.
Purpose	Ansoff, 1968	We have a clear idea of what our investor/s expect of us.
Management by objectives	Andrews, 1980	Organisational objectives, formulated by management, which guide all behaviour, are reflected throughout the organisation.
Attitude to futurity	Grulke & Silber, 2000; Hamel & Prahalad, 1996b; Thompson & Strickland, 2001	Commitment to strategic thinking has been an important contributor to our performance.
Strategic alignment	Buzzell, <i>et al.</i> , 1975	Consideration of the requirements of our investor/s are important to us when we set strategic objectives.
Perspective	Hamel & Prahalad, 1989; Venkatraman, 1989	Our criteria for resource allocation generally reflect longer-term considerations.
Strategic practice	Whittington, 1993	We have a written strategic plan which we review regularly.
D2 CUSTOMER CENTRICITY (Customer bonding, lock-in, site performance and switching costs)		
Customer bonding	Hax & Wilde, 2001b	If you ask any of our customers s/he will say we make them feel special.

Measure	Source	Questionnaire item
Site performance	Agarwal & Venkatesh, 2002; Evans & Wurster, 1999; Hax & Wilde, 2001a; Palmer, 2002; Smith, <i>et al.</i> , 1999	Sales are dependent on the security of our website
Follow-up	J P Morgan, 1999; Smith, <i>et al.</i> , 1999	People rate our after-sales service as more important than price.
Metrics	Hax & Wilde, 2001a	The use of metrics has enabled us to maximise our online experience from a customer's perspective.
Switching costs	Amit & Zott, 2001; Hax & Wilde, 2001b	Most of our business comes from repeat sales to existing customers.
Customer relationship management	Hax & Wilde, 2001b	Our customer information and relationship management systems make a positive contribution to sales.
Customer lock-in	Chaffey, 2002; Hax & Wilde, 2001b	Customers will agree that our website has become more of a resource for them than a sales channel.
D3 MACRO-ECONOMIC POSITIONING (Positional benefits, integrating functions and defending a position)		
Schumpeterian rents	Becker & Knudsen, 2002; Cohen, 2002; Schumpeter, 1934	Because we have an online business, if management did nothing for 6 months, we would still make money.
Market dominance	Miles & Snow, 1978; Porter, 1980	Our dominant market position is what keeps potential competitors at bay.
First-to-market	Arthur, 1996; D'Aveni, 1998; Kim, <i>et al.</i> , 2001	Being in the "right business (internet-based) at the right time" has important implications for the value of our business.
Cost	Kay, 1993; Porter, 1985	If we keep our costs the lowest in our industry, our survival is guaranteed.
Process differentiation	Porter, 1985	Doing things differently has an impact on our performance.
Product differentiation	Porter, 1985	Making different products or rendering different services has a positive impact on our performance.
Competence imitability	Barney, 1991	Our competitors cannot easily copy our core competencies.

Measure	Source	Questionnaire item
Competence transparency	Hamel & Prahalad, 1990	Our core technologies are well-concealed from our competitors.
D4 MARKET EXPLOITABILITY (Revenues from intimate market examination, niches, business model, community)		
Thoroughness	Chatterjee & Segars, 2002; Hax & Wilde, 2001a; Skyrme, 2001	We frequently identify opportunities in our market missed by others.
Orientation	Hamel & Prahalad, 1989	Marketing and information technology are equally important in our business.
Pricing	Bakos, 1997; Brynjolfsson & Smith, 1999; J P Morgan, 1999	Price is not the main reason why customers buy from us.
Niche	Chaffey, 2002; McDougall & Robinson, 1990; Porter, 1985	By focusing on a specific market, we have been able to create a viable niche.
Brand orientation	Brynjolfsson & Smith, 1999; Noble, <i>et al.</i> , 2002	A strong online brand contributes to our profitability.
Customer orientation	Afuah & Tucci, 2003	Our business model has been developed by carefully taking customer feedback into account.
Community	Tapscott, <i>et al.</i> , 2000	We have welded our customers into a community who now actually depend on us.
D5 ECONOMIC INNOVATIVENESS (Different from an off-line business, profitability, value from functional integration)		
The value of the web	Palmer, 2002; Timmers, 2000	The only difference between a similar, non-internet business and our business today, is the fact that we are on the internet.
Degree of net-enhancement	Timmers, 2000	The type of business we have could not exist without the internet.
Flexibility	Amit & Zott, 2001; Barnes-Vieyra & Claycomb, 2001; Chatterjee & Segars, 2002; Green & Himelstein, 1999; Hamel, 2000	We continuously reinvent ourselves.
Structural innovation	Hamel, 2000; Hamel & Prahalad, 1996a	Re-inventing our business model has had a positive effect on profitability.

Measure	Source	Questionnaire item
Web innovation	Timmers, 2000	Through “innovation and integration” our business has moved further and further away from how a similar, but non-internet (off-line) business would function.
Complacency	Hamel & Prahalad, 1996b	We have experienced how innovation leads to further innovation.
Functional integration	Porter, 1985; Rappa, 2002; Timmers, 2000	The internet has enabled us to integrate more and more functions over time.
D6 INTERJACENCY (Value-chain benefits, disintermediation, value through alliances)		
Alliance formation	Snow & Raymond, 1992; Tapscott, 2001; Tapscott, <i>et al.</i> , 2000; Welborn & Kasten, 2003	Our information technology function is better performed by ourselves than outsourced to a third party.
Co-opetition	Tapscott, <i>et al.</i> , 2000; Welborn & Kasten, 2003	If it is in our financial interest to do so, we will even collaborate with our competitors.
Outsourcing through alliances	Tapscott, <i>et al.</i> , 2000; Welborn & Kasten, 2003	We readily outsource functions that can be performed better by others.
Disintermediation (outbound logistics)	Coase, 1937; Cohen, 2002; Madhok, 2002	We seek to bypass intermediaries and get as close to the end-customer as we can.
Disintermediation (supply chain)	Porter, 1985; Tapscott, <i>et al.</i> , 2000	We source most of our input materials directly from the primary source.
Value-chain exploitation	Porter, 1985; Tapscott, <i>et al.</i> , 2000	Our financial performance has been enhanced by being able to cut out the intermediaries.
Supply-chain integration	Hax & Wilde, 2001b	Our systems interface directly with those of our suppliers.
D7 DIGITAL SPONTANEITY AND SCALABILITY (Instinctive response, proactive implementation, profiting from information and communications technologies)		
IT alignment	Chatterjee & Segars, 2002; Henderson & Venkatraman, 1993; Norton, 2002; Ragu-Nathan, <i>et al.</i> , 2001; Van Der Zee & De Jong, 1999	Our investment in communications technologies is always closely matched to the growth in our business.
Systems availability	Straub & Klein, 2001	The non availability or downtime of our systems has not affected our business performance.

Measure	Source	Questionnaire item
Technology dependence	Straub & Klein, 2001	Technology is our key to getting new products or services into the market before our competitors.
Research and development	Hamel, 2000	We constantly review new technology developments to find ways of staying ahead of our competitors.
Instinctiveness	Venkatraman, 1994, 2000	We pre-empt our competition, expanding our technological capabilities faster than they can.
Implementability	Afuah & Tucci, 2001; Chaffey, 2002; Kaplan & Norton, 2000; Orlikowski & Iacono, 2001; Wang, 2001	When technology decisions are made, they are implemented quickly.
Executive attitudes	Iacovou, <i>et al.</i> , 1995; Nambisan & Wang, 1999; Poon, 2000; Poon & Swatman, 1999	Our head of information technology provides critical inputs to our firm's strategic plan.
Management information system performance	Chatterjee & Segars, 2002; Corbitt, 2000	Our management information systems meet our needs.
Investment criteria	Chatterjee & Segars, 2002; Hax & Wilde, 2001b	Relative to other resources, we aggressively invest capital in information technologies.
Asset utilisation	Kanter, 2001a	Our approach towards legacy systems we may have, is to "build on the best".
D8 KNOWLEDGE MANAGEMENT (Managing knowledge resources for competitive advantage)		
IT activity track (Knowledge as object)	Sveiby, 1997, 2001	We have a formal, centralised, retrievable process for collecting, storing and deploying key knowledge-based material.
People track (Tacit knowledge)	Sveiby, 1997, 2001	The turnover of our skilled staff is below the industry norm.
Knowledge management enabler	Nonaka & Takeuchi, 1995; Polanyi, 1967	Our employees will agree that communications within our organisation are effective.
Sharing knowledge (Tacit knowledge)	Botha & Fouche, 2002; Skyrme, 2000	Our culture of knowledge sharing impacts on profitability.

Measure	Source	Questionnaire item
Staff attitude towards knowledge sharing	Botha & Fouche, 2002; Skyrme, 2000	It's obvious who in this organisation will assist to solve problems that the business has encountered before.
D9 INNOVATIVE AGGRESSIVENESS (Innovation investment and innovation management)		
Research and development budget	Hamel, 2000; Venkatraman, 1989	We spend a large percentage of our capital on research and development.
Attitudes	Hamel, 2000; Hamel & Prahalad, 1996b; Hamel & Valikangas, 2003	Innovation is a part of every employee's written job description.
Innovation metrics	Chaffey, 2002; Hamel, 2000	Innovative ideas have contributed measurably to the success of our business.
Innovation metrics	Chatterjee & Segars, 2002; Hax & Wilde, 2001b	We formally measure our innovation outputs.
Trade-offs	Evans & Wurster, 1999; Hax & Wilde, 2001b	In a choice between increasing our market share or increasing profit, we opt for getting more customers.
Performance appraisals	Hamel, 2000	We review our employee's contribution to creative thinking.
Innovation incentives	Hamel, 2000	In this organisation, it is possible that employees with value-contributing ideas can earn more from innovation-linked bonuses than from the monthly salary they receive.
Innovation impact	da Vinci Institute, 2003; Gopalakrishnan, 2000	A major portion of today's profitability results from product and process innovation over the past 3 years.
D10 EQUIVOCALITY (Analysis, risk-taking, uncertainty and priority setting)		
Risk averseness	Venkatraman, 1989	We prefer to adopt an "it is better to be safe than sorry" approach when making important decisions.
Management risk profile	Venkatraman, 1989	We prefer projects that are more certain in outcome but with low returns, rather than those less certain but with higher returns.
Priority balance	Practical experience in the field	In this organisation we experience "analysis paralysis".

Measure	Source	Questionnaire item
Uncertainty	Corbitt, 2000	In this organisation you need a good argument to change your boss's priorities.
Priority clarity	Practical experience in the field	In this organisation it is clear what our priorities are.
Analysis	Venkatraman, 1989	We solve most of our problems by beginning with finding the root cause and progressing logically.
Legacy	Practical experience in the field	Decisions taken in our past prejudice the solving of our present problems.
D11 HARMONY (The existence and quality of a uniting, central theme)		
Vision presence	Kaplan & Norton, 2000; Miller, 1986	The vision of the founder/investor/managing director motivates and guides our entire organisation.
Vision success	Cohen, 2002; Miller, 1986; Vorhies & Morgan, 2003	The vision has been the driving force from the start of our business.
Vision-related incentivisation	Goldberg & Sifonis, 1998; Miller, 1986	I sometimes feel that the vision is almost more fulfilling than the salary I receive.
Alignment	Kettinger, <i>et al.</i> , 1994; Khandelwal, 2001; Van Der Zee & De Jong, 1999	The vision keeps the objectives of all our divisions closely aligned.
Executive management attitude	Corbitt, 2000; Frenzel, 1992; MacKay, <i>et al.</i> , 2002; Van Der Zee & De Jong, 1999	In this organisation, executive management realise the importance of being totally committed to the successful performance of the information technology function.
D12 DYNAMIC PLIANCY (Resource-saving routines, flexibility and responsiveness)		
Flexibility commitment	Eisenhardt & Martin, 2000	We spend money to ensure that we keep our business flexible.
Responsiveness	Teece, <i>et al.</i> , 1997	We make use of pilot studies to test risky ideas or ventures.
Flexibility	Eisenhardt & Sull, 2001	Our staff are generally multi-skilled people.

Measure	Source	Questionnaire item
Routines	Eisenhardt & Martin, 2000	We have no time for the luxury of routine practices – almost everything we do has to be made up as we go.
Adaptability	Brown & Eisenhardt, 1997; Eisenhardt & Sull, 2001	Our business can change direction with minimal disruption.

The items listed in this table become the item pool of the questionnaire and bring to a conclusion the development work on the strategic architecture construct.

5.7 IN SUMMARY

The linkage between strategy and performance for traditional business undertakings has been well documented in the literature. The networked economy, spawned by the internet and its technologies, has permanently changed the business environment. In order to explore the strategy/performance link for firms, a construct of strategic architecture is required. Strategic management literature revealed the value to the strategy arsenal of any enterprise, whether networked economy or not, of strategic intent, industry positioning benefits, risk, core competencies and technology. In addition, the need for value as a core proposition was viewed as one of the main contributions from the literature on business models. The strategic architecture construct was completed by examining the characteristics of e-businesses, in which the contribution to performance of knowledge and its management, interjacency, harmony, dynamic pliancy and market innovativeness were evident. Strategic architecture, as with its parallels in the construction industry, was posited as a fundamental blueprint for successful performance. This relationship awaits empirical confirmation.

This study examines the linkage between strategy and performance. Of necessity, therefore, is the requirement for two constructs in this study. The first measures the components of appropriate management behaviour toward creating and sustaining competitive advantage. Success must be defined and measured. A construct of performance for firms in the networked economy is developed in the next chapter.

CHAPTER 6

A CONSTRUCT OF BUSINESS PERFORMANCE

6.1 INTRODUCTION

In the previous chapter the evolution, definition and dimensions of strategic architecture were discussed. Strategic architecture was posited as a prerequisite for the success of an electronic commerce venture. Performance, in this study, is the dependent variable. The earlier sections (refer to Chapters 3, 4 and 5) explored the ways in which management face the demands made upon them, and the strategies required for effective competitive advantage in the turbulent environment. This chapter will demonstrate in the light of these factors, that there is no one, simple, effective measure of performance for web-enabled enterprises. Historical financial metrics, for example, will be shown to have limited application to networked economy ventures. The most appropriate measure, therefore, is a complex construct of performance that accommodates all relevant characteristics. This chapter, still pertinent to the literature study, explores traditional and new measures of performance, relates these to the requirements of firms operating in the networked economy, and develops an appropriate construct. This construct will be correlated with strategic architecture.

For good reason, specialised metrics and different approaches to viewing performance have been developed to assist with performance measurement and valuation of e-business ventures. It will be shown later that traditional measures, when used to gauge the performance of internet firms, have not always proven reliable. The management priorities, and hence, shareholder returns, of an electronic business, most notably for the first few years of its operation, can be different from those of a traditional venture. Customer growth may take precedence over other business priorities. In the emerging local market, the chief executive officer of Kahlari.net, one of South Africa's most enduring pure online companies, maintains that their challenge, even after many years of operation, remains growing the customer base (Winterbach, 2004).

6.1.1 Purpose of metrics

Measurement and accountability are traits of well-managed ventures. They raise the need for appropriate metrics. Organisations that use benchmarks to gauge their performance, can readily identify problem areas, formulate contingency plans and redirect resources to better orchestrate their competitive efforts. In the worst case, the business may fail to develop appropriate metrics for assessing its performance and misinterpret warning signals. Measures should have a broader base if they are required to evaluate strategic performance. Such measures could, for example, reflect performance in terms of how customers perceive a value proposition or how a product offering performs in the marketplace. The situation is confused when financial metrics are applied, for example, when assessing e-adoption progress or the impact of change. Financial measures, in such situations, may be most inappropriate. The weaknesses of traditional measures of performance include the inability to factor in a contribution to performance from intangibles such as market-share growth or improved organisational flexibility (Libby, Libby & Short, 2001:447-450). As with any business, there is a need not only for shareholder reporting, but also for management to gauge business progress in order to be able to better predict the outcomes of future strategic behaviour. Rayport and Jaworski (2001:258) find similar shortcomings when financial measures are applied indiscriminately. Despite the controversy, however, performance measurement remains indispensable to the investor and academic. Venkatraman and Ramanujam (1986:801) maintain that “for the strategy researcher, the option to move away from defining and measuring performance or effectiveness, is not a viable one. This is because performance improvement is at the heart of strategic management”. They view enterprise performance as the ultimate result of strategy effectiveness.

Metrics can produce very positive results in an organisation. Rayport and Jaworski (2001:265-7) suggest several ways in which metrics can positively affect the growth and vitality of an organisation. These are summarised in Table 6.1.

Table 6.1: Metrics for growth and performance

Purpose	Function
Define the business model	Specify goals with precise measurement. Definition of the value proposition.
Communicate strategy	Performance targets communicate goals and strategy, and facilitate employee buy-in.
Track performance	Site performance metrics such as usage, visitors, length of time on site, average sales, page views.
Increase accountability	Linked to performance appraisal and reward system. Define accountability.
Align objectives	Align individual objectives with departmental goals, and strategic behaviour.

Source: Rayport & Jaworski, 2001:259

The purpose and functions as shown in the table, concur with the dimensions of strategic architecture discussed before (refer to Section 3.11). Futurity (goals and targets), reward (innovative aggressiveness), performance (customer centricity) and alignment (harmony) are reflected in the dimensions concerned. The performance dashboard, proposed by Rayport and Jaworski, further addresses the shortcomings of traditional strategy measures, and is discussed later in Section 6.4.7.

6.1.2 Adoption of metrics

Metric adoption and implementation is not universal. There are some firms that make no explicit commitment to performance measurement. This behaviour is likely to impact on the response rate in the empirical phase of this study.

There are several reasons, discussed in the literature, why managers of firms may refrain from deploying metrics (Rayport & Jaworski, 2001:260). Since business models change frequently as competitors emerge and market opportunities appear, so metrics have to change accordingly. Some argue that measurement is excessively resource-intensive. Since capturing and setting up metrics requires new systems and procedures, these may make demands on capital investment and time. Furthermore, the interpretation of presented data requires management

discipline. Notwithstanding security technologies, some managers may continue to believe that measurement systems are vulnerable to being compromised.

The investment community demand factual data. Information relating to revenues, margins, number of visitors, length of time on site and customer acquisition costs, when combined with usability measures, permit such comparisons to be made. In addition to investor information, they may also be effective as early warning indicators of deteriorating customer satisfaction or general business performance.

The networked economy is evolving, and metrics, their application, implementation and interpretation are changing concomitantly. Where hits once were a measure of success, page views have now become important. Others, such as conversion rates, are still considered appropriate measures today. Similar adoption concerns are reported by Elliot (2002:329) where difficulties in strategy implementation and the lack of “a clear linkage between corporate business strategies and the internet venture” and “the lack of business skills” serve only to compound resistance to performance measurement in practice.

One lasting benefit of traditional financial metrics is that they remain timeless. Electronic commerce measures appear to change as businesses learn to interpret the data and develop a need for more, or more meaningful information. The application of purely financial measures has limitations in that, while they may reflect the performance history of the company in the marketplace, they do not provide sufficient warning for problems requiring corrective action before disappointing financial returns are realised. Financial results are essentially a measure of the success of past strategies. A further shortcoming is that financial measures are output measures that do not adequately reflect the strategy of the company.

6.1.3 Prescribing dimension properties

The basis of the performance construct differs from that of the independent variable in this study. The content of the strategic architecture construct was inclusive, and incorporated all the dimensions, items and measures considered relevant, as found in a study of the literature. Business performance can likewise be a broad field of study. Prescribing its properties in advance, though, enables its scope to be better defined, thus facilitating its study.

The performance construct exists in a domain with different characteristics from those of strategic architecture. In contrast to strategy, for example, the electronic commerce industry is a relatively recent phenomenon. The complexity in attempting to value the contribution of intangibles to a business, highlights the problem encountered when applying financial measures to network economic ventures. On the other hand, specialist e-business metrics have not yet achieved universal acceptance.

In the light of these concerns, and the fact that the questionnaire already contains 78 items pertaining to strategic architecture, the performance construct should contain dimensions reflecting the following properties:

1. Broad base. The construct should consider performance measures common to both online and offline (traditional) firms in the identification of suitable dimensions.
2. Inclusiveness. The items characterising the dimensions should be focused but still endeavour to objectively capture as much of the performance of the business as possible.
3. Non-threatening. It is probable that managers will be reluctant to reveal what they may consider to be sensitive information. The items for the dimensions should therefore not be unsettling, threatening to management or engender feelings of incompetence.
4. Simplicity. Managers may use simple indicators, especially those who have new businesses. They may not yet have the systems in place to deliver more complex information. A simple metric, however, is better than none.

6.1.4 Chapter outline

With a view to developing an appropriate research construct for measuring the performance of commercial web-based enterprises, this chapter has the following broad outline:

1. The background, purpose and adoption of metrics.

2. The context of business performance as a subset of organisational effectiveness. This section frames the performance domain and discusses sources of data for research.
3. A literature study on best practice metrics and their possible contribution to dimensions. Exploration begins in the field of strategic management, reviews entrepreneurship studies and e-business metrics, and ends with a discussion of the scorecard measures.
4. Financial measures and their applicability to this study are reviewed, beginning with concerns regarding intangible assets. Traditional measures of value such as cost/benefit analysis, net present value and internal rate of return are then discussed.
5. The discussion continues with the suitability of emerging measures of e-business performance, including real options and proprietary metrics.
6. The chapter concludes by motivating the performance dimensions selected for the research construct.

6.2 THE DOMAIN OF WEB-ENABLED BUSINESS PERFORMANCE

An effective construct is one that is clearly defined with precisely delineated boundaries. This construct is framed within the broader context of organisational effectiveness. It will be shown later that business performance is a subset of organisational effectiveness. Electronic commerce may be a new business typology, but the principles of performance measurement remain unchanged. The generic purpose of any commercial enterprise is to gather resources, and using knowledge and expertise, add value and sell an offering at a profit. Metrics evaluate the efficiency of these processes. A review of the literature along these lines will contribute towards the performance construct.

Murphy, Trailer and Hill (1996:15-16) find performance measurement research grounded on organisational theory and strategic management. They identify three historical approaches to performance measurement. These are the goal, systems and constituent perspectives. In one

of the early goal-based approaches to performance research, Etzioni (1964) suggests that an organisation be evaluated by the goals that it sets for itself. In today's environment, businesses are very different from each other. The business goals and ownership structures for a service industry or knowledge-based firm, are very different from those of multi-national manufacturing conglomerates so prevalent in the 1960s. Comparing, for example, Google with General Motors on this basis, shows just how wide the divide has become. Each would measure goal setting and achievement in different ways. This form of evaluation makes meaningful inter-firm comparisons almost impossible.

The systems approach of Georgopolous and Tannenbaum (1957) partially compensated for Etzioni's shortcomings by considering the simultaneous achievement of multiple aspects of generic performance. While this view is more encompassing, it makes no accommodation for the differences in the requirements of the various stakeholder groups. The perspectives of an information technology manager, or e-commerce marketing manager, for example, are likely to differ radically from the requirements of a passive investor.

In the latter 1960s, Thompson (1967) developed a multiple constituency approach which took cognisance of different requirements. He views performance in the light of the demands of the various stakeholder groups. In the customer-centric electronic commerce environment, this more pervasive approach is relevant. Performance, then, should be measured in terms of several criteria. Later in this chapter the contribution of e-business metrics are discussed for inclusion with financial measures into the construct. Thompson's approach also allows for investor metrics and the internally generated measures such as conversion rates and repeat-purchase customer growth. Thompson's perspective underpins the multi-dimensional approach of this project.

In the context of the study, performance may be regarded as a subset of organisational performance. Strategy research builds on the perspectives discussed before (refer to Section 3.9), and locates organisational performance in terms of a hierarchical structure as shown in Figure 6.1. Operational performance dimensions such as product quality and market share define a broader conceptualisation of organisational performance, since these measures focus on factors that ultimately lead to financial performance (Hofer & Sandberg, 1987; Kaplan, 1983). The view of this study, consistent with the literature (Venkatraman & Ramanujam,

1986), is that business performance, as approached from a strategic management perspective, is a subset of organisational effectiveness with clearly defined linkages.

In its narrowest context, effectiveness may be measured by simple, historical financial indicators that reflect the fulfilment of the strategies and economic goals of the firm. Such purely financial performance has been the subject of empirical strategy research (Hofer, 1983). Also typical of this approach would be the application of indicators such as profitability, measured by the return on investment; sales growth, measured by return on sales; and return on equity, measured by earnings per share. Caveats in the application of financial measures are discussed in more detail later (refer to Section 6.6.6).

There is another view that, in the overall business context, market or value-based measurements can be more appropriate for defining performance than accounting-based measures (Hax & Majluf, 1984). The broader conceptualisation of business performance as applicable, for example, to firms in the networked economy, should include non-financial indicators of operational performance, in addition to indicators of financial performance (Chatterjee & Segars, 2002). Dimensions such as market-share growth, the rate of new product introduction, product quality and marketing effectiveness, reside within this domain of business performance. Market share, frequently considered a determinant of profitability (Buzzell, *et al.*, 1975) also falls within this perspective. Operational performance indicators go beyond the use of financial indicators and focus on those key operational success factors that contribute to financial performance. Venkatraman and Ramanujam (1986) find that most strategy studies have restricted their focus to the first two inner circles shown in Figure 6.1.

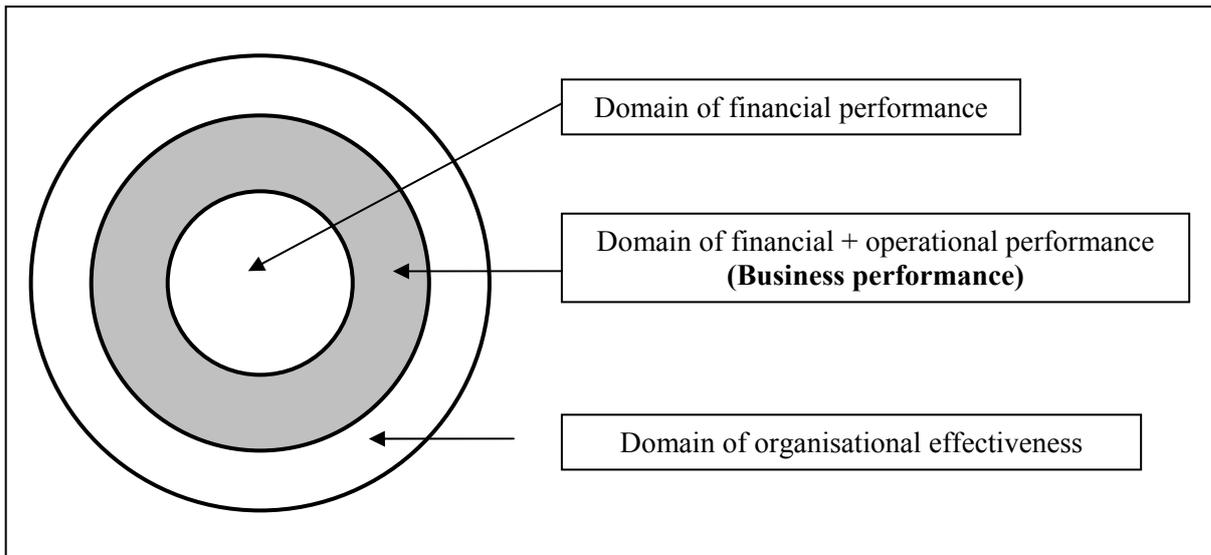


Figure 6.1: Bounding the domain of business performance

Source: Venkatraman & Ramanujam, 1986:803

This diagram shows the relational subsets of:

- Financial performance, a construct frequently encountered in strategy research;
- Business performance as it applies in this study; and
- Organisational effectiveness.

Broadening the scope to include business performance, motivates the further inclusion of metrics of operational performance such as the contribution of intangible assets (for more details on intangible assets refer to Section 6.5). These measures include indicators such as market-share, rate of new product introduction, product quality, economic value-added and other measures within the domain of business performance that address, for example, the technological or marketing efficiency of the business. Similarly, other metrics such as determinants of profitability may be included as useful indicators of performance within this perspective.

These operational performance indicators move measurement beyond the predominantly mechanical approach, which has characterised the traditional use of financial indicators in the past, to key operational success factors.

6.3 PRIMARY OR SECONDARY RESEARCH DATA

An important issue in the operationalisation of a performance construct is the source of research data. Traditionally sources of performance data have either been primary, when data is collected directly from organisations, or secondary, when sourced from the public domain. This creates four variables in the process: primary or secondary data, and financial versus operational indicators as shown in Figure 6.2.

Financial Indicators	Use of financial and operational indicators with data from secondary sources	Use of financial indicators with data from two sources		Use of financial and operational indicators with data from primary sources
		1	2	
Operational Indicators	Use of financial and operational indicators with data from secondary sources	3	4	Use of financial and operational indicators with data from primary sources
		Use of operational indicators with data from two sources		
	Secondary	Primary		

Figure 6.2: Alternate approaches to measuring business performance

Source: Venkatraman & Ramanujam, 1986:805

As discussed above, the approach to performance measurement used in this study focuses on both financial and operational indicators, with the data obtained from primary sources – the quadrants two and four shaded in Figure 6.2. This process is consistent with the literature (Bourgeois, 1980; Gupta & Govindarajan, 1984).

Problems may be encountered when using secondary data. Tull and Hawkins (1976:116) highlight certain concerns. The authors suggest careful assessment of the relevance of the data and accuracy before application. Relevance is the extent to which the data fit the information needs of the research problem. Even when the data cover the same general topic as

that required by the research problem, they may not fit the requirements of the problem. Three problems reduce the relevance of data.

First, there is often a difference in the units of measurement. A second general problem that can reduce the relevance of secondary data is the definition of classes. Certain variables and similar category-type breakdowns found in secondary data frequently do not coincide with the exact requirements of the research problem. The final major factor affecting relevancy is time. Generally, research problems require current data. Most secondary data, such as census data, may have been in existence for some time. Data are frequently collected one to three years prior to publication. The publication itself may be several years old before it is utilized. It is not uncommon to find the exact data needed that are just too old to be relied upon. Accuracy is the second major concern of the user of secondary data. The real problem is not so much obvious inaccuracy as it is the difficulty of determining how inaccurate the data are likely to be. External sources are trade associations, government agencies, published sources and syndicated services.

6.4 BUSINESS PERFORMANCE MEASURES

In this section, the contributions of various authors are considered. Beginning with entrepreneurship studies, the discussion then moves to metrics developed in practice. Since online businesses spawned by the internet are often the result of entrepreneurial endeavours, it is appropriate to include measures from this field of literature.

6.4.1 Performance and strategic management

In a survey of performance measures used in research on strategic management, predating the internet, Chakravarthy (1986:440) identified 14 distinct quantitative metrics. These are:

- Return on investment;
- Return on sales;
- Growth in revenues;
- Cash-flow/investment;
- Market share;
- Market share gain;

- Product quality relative to competitors;
- New product activities relative to competitors;
- Direct cost relative to competitors;
- Product research and development;
- Process research and development;
- Variations in return on investment;
- Percentage point change in return on investment; and
- Percentage point change in cash-flow/investment.

The authors factor-analysed the variables using the PIMS data base, and isolated four factors which they termed:

- Profitability;
- Relative market position;
- Change in profitability and cash-flow; and
- Growth in sales and market share.

Of all the factors, profitability demonstrated the highest magnitude. Over the ten years following this study, entrepreneurship emerged as an important field of study.

6.4.2 Performance in entrepreneurship studies

In later work, Murphy, *et al.*, (1996) reviewed 51 published studies in which they identified common dimensions of performance used by researchers when conducting empirical studies into the performance of small businesses and/or new entrepreneurial ventures. With the possible exception of efficiency, discussed as return on investment but not identified as an important factor at that time, their results were not very different from the findings of Chakravarthy (1986) discussed above. The domain of the studies did differ. Chakravarthy examined the strategic management field and Murphy, *et al.*, entrepreneurial studies.

Table 6.2 presents a listing of these dimensions from the Murphy, *et al.*, study and the frequency with which they are encountered.

Table 6.2: Dimensions of performance and the frequency of occurrence

Dimension	Frequency (n=51)
Efficiency	30
Growth	29
Profit	26
Size	15
Liquidity	9
Success/Failure	7
Market Share	5
Leverage	3

Source: Murphy, *et al.*, 1996:16

In the Murphy, *et al.*, study, the use of the word “performance” resulted in the inclusion of constructs measuring various different aspects of performance. Their findings revealed that the majority of performance measures were related to one of eight performance dimensions (Murphy, *et al.*, 1996). Efficiency, growth, and profit were the most commonly encountered dimensions. The measures of each dimension and their frequencies of use are shown in Table 6.3. The list includes those measures encountered more than once.

The table shows that, for some dimensions such as growth and size, only a few measures were commonly observed. For other dimensions such as profit and liquidity, a greater diversity of measures was observed.

Table 6.3: Performance dimensions and frequency of use (more than once)

Dimension	Measure	# (n=51)
Efficiency	Return on investment	13
	Return on equity	9
	Return on assets	9
	Return on net worth	6
	Gross revenues per employee	3
	Average return on assets	2
	Growth	Change in sales
Change in employees		5
Market share growth		2
Change in net income margin		2
Change in CEO/owner compensation		2
Profit	Return on sales	11
	Net profit margin	8
	Gross profit margin	7
	Net profit level	5
	Net profit from operations	5
	Pre-tax profit	3

Dimension	Measure	# (n=51)
Size and/or liquidity	Sales level	13
	Cash-flow level	6
	Ability to fund growth	5
	Current ratio	2
	Quick ratio	2
	Number of employees	5
Failure	Discontinued business	4
Market share	Respondent assessment	3
Leverage	Debt to equity	2

Source: Murphy, *et al.*, 1996:17

It is suggested by Venkatraman and Ramanujam (1986) that performance measures be classified as either financial or operational. A review of the data in Table 6.3, however, reveals that the majority of the studies applied financial measures. The dimension that may impact on broader operational performance is market share. Some of the measures appearing under the headings of “growth” dimension may, however, partially address the operational performance dimension. In the Murphy *et al.*, (1996) paper it was further reported that 75% of the studies used primary data sources, with the most common secondary source being data from the PIMS database. The absence of such a convenient source of analytical data in South Africa suggests the use of primary data in this study.

Venkatraman and Ramanujam’s (1986) suggestion that the operational as well as the financial aspects of performance be considered, implies that performance measurement could be improved by using multiple dimensions for performance. Other authors have also noted the value of using multiple measures for the dimensions of performance (Kaplan, 1983;

Venkatraman & Ramanujam, 1986). It is important to note that the Murphy study considered work published in the literature between 1987 and 1993, effectively predating the internet. This study builds on their work and extends the number of dimensions later in the light of e-commerce practice. Based on their findings, Murphy, *et al.*, (1996) make four observations:

- Multiple disparate measures can be used to assess performance;
- Measures may cover a number of dimensions of firm performance;
- Some studies included measures of one or more dimensions; and
- Control variables were not always used.

The shortcomings of traditional measures triggered the need to move beyond financial considerations. The electronic business industry has developed metrics considered more appropriate for the evaluation of their performance.

6.4.3 E-Business metrics

In a recent analysis of common electronic business practice, Chatterjee and Segars (2002) classify the observed performance metrics into three classes:

Class I - Metrics for assessing electronic marketplace performance.

Class II - Measures addressing the “digital readiness” of the underlying business model.

Class III - Measures that capture the ability of the firm to collaborate electronically in the development of new products and services.

Class I metrics. The purpose of Class I measures is to determine the competitive strength and long-term viability of the e-commerce venture in its emerging marketplace. A viable market is one with a growing number of active users and successfully settled transactions. The business excels when converting hits into product sales. The metrics for Class I and their details are summarised in Table 6.4 with a view to identifying dimensions in terms of the properties of the performance construct.

Table 6.4: Class I metrics - assessing participant performance in electronic markets

	Metric	Explanation
Acquisition	Buyer growth rate	Rate of increase in active buyers in the marketplace
	Marketing expenses/sales per active user	Dollars of sales generated through marketing expenses
	Active users/total members	The percentage of active users relative to members
	Acquisition effectiveness	Percentage of transactions in which buyer and seller settle
	Former members/total members	Churn rate
Penetration	Transactions/total transactions	Electronic transactions as a percentage of total transactions
	Transactions per active user	Average number of transactions for all active users
	Average transaction value	Average transaction value for all active users
	Transaction growth rate	Growth in transactions for active users
	Transaction value growth rate	Growth in transaction value for active users
	Number of transactions	Total number of transactions
Monetisation	Total revenue/total number of active users	Average revenue per active user
	Total revenue/total number of transactions	Average revenue per transaction
	Operating expenses/revenue	Operating margin
	Total income/total transactions	Average transaction fee

Source: Chatterjee & Segars, 2002:13

In this table, acquisition is the ability of e-commerce market participants to engage in, and successfully complete transactions. Penetration measures the activity of members in terms of number and value of transactions, and monetisation relates to the profitability of the electronic

marketplace. As will be shown later, three of the metrics from this table make a contribution in terms of the required construct properties. These are acquisition, as measured by buyer growth; penetration, as defined by transaction value; and profitability, as measured by operating margin.

Class II metrics. The characteristics of the next class of metrics, those aimed at measuring the “digital readiness” of the business, are summarised in Table 6.5. These address the capability of the organisation to conduct electronic transactions in a cost-effective manner. Such measures capture how the firm designs its processes and profits from the capabilities of new technology. They also assess the utility value of information flows between the firm and its suppliers and customers, and measure the responsiveness to the customer. These metrics gauge the flow of information between selling technology and manufacturing/scheduling technologies – in an ideal situation the customer is given instant confirmation of product availability and pricing, but in practice such integration is a challenge. This class of measures is based on cash-flow where the business objective is to improve funds flowing throughout the firm and supply-chain.

Table 6.5: Class II metrics - assessing digital readiness

	Metric	Explanation
Digital quotient	Digital processes/total processes	Percentage of processes that are digital
	E-enabled suppliers/total suppliers	Percentage of suppliers doing business electronically
	E-enabled customers/total customers	Percentage of customers doing business electronically
	Transparent suppliers/total suppliers	Percentage of suppliers with two way views into databases
	Transparent customers/total customers	Percentage of customers with two way views into databases
	Online transactions/total transactions	Percentage of transactions done electronically
Customer service	Customer response time	Time to respond to customers in automated reply and in personalised electronic reply
	Recognised customers/total customers	Percentage of customers sent personalised content during electronic inquires
	Electronic purchases/total customer visits	Conversion of visits to purchase
	Customised products/total products	Percentage of customised products sold
	Electronic inquiries/total inquiries	Percentage of inquiries initiated electronically
	Electronic sales/total sales	Electronic sales as a percentage of total sales
	Confirmation cycle time	Time to confirm availability and pricing
Cash-flow	Average price/electronic price	Yield
	Order confirmation (bid) to cash cycle	Days from order confirmation (bid) to cash generation
	Days sales inventory + days sales receivables - days sales payables	Free cash-flow
	Net income/operating expenses	Return on operating expenses

Source: Chatterjee & Segars, 2002:14

In this table, some of the classes reflect the same characteristics as the strategic architecture construct. In a customer-centric view of the firm, the core management activities of operational effectiveness are the production and delivery of goods and services, customer targeting processes and the ability to innovate in the development of new products. Strategy must be closely linked with execution (Hax & Wilde, 2001a:385). Metrics tend to apply to the aggregate level where they have relevance to the overall, integrated business, and also at the granular level where fundamental performance drivers are measured. The appropriate metrics should relate to operational effectiveness, regarded as “doing the right things”, and include such intangibles as defining the measures of system performance, analysing profit contribution by product, finding the cost drivers, using quality criteria, measuring product differentiation and defining the economic drivers of the firm’s customers. Customer targeting metrics include profit by customer, market share trends, identifying channel costs, customer retention and identifying customer switching costs.

Class III metrics. The third class of measures are those applied in practice that address the ability of the firm to collaborate electronically on the development of new products and services, and measure the exchange of knowledge and innovation flowing from these activities. The metrics are shown in Table 6.6. Such measures are also used to evaluate the quality of internal collaboration between business units or members of a business web (Tapscott, *et al.*, 2000; Welborn & Kasten, 2003) such as suppliers, customers, competitors, and complementary product producers. This approach includes the valuation of innovation processes as measured by the number of new concepts screened or number of prototypes developed, and quantifies the firm’s ability to move ideas from the drawing board into production.

Table 6.6: Class III metrics - assessing marketplace collaboration

	Metric	Explanation
Innovation	Concepts screened per quarter	Number of new concepts evaluated
	Prototypes developed	Number of prototypes formally evaluated
	Concept cycle time	Days from concept to development
	Reaction cycle time	Days to match a competitor's initiative
	Exclusivity	Days before competitors match an initiative
	Patents and intellectual property	Number of new patents registered and intellectual property
Learning	Information/knowledge acquisition	Time to find documents or access to experts
	Forecasting accuracy	Improvement in forecasting capabilities
	New knowledge access	Number of new sources for knowledge and information
	Reduced duplicity	Savings gained through elimination of duplicate tasks
Investment	Net income/assets	Return on investment
	Firm capitalisation/industry capitalisation	Migration of market capitalisation through the business and industry growth
	Weighted average cost of capital	Assessing the impact of risk on the cost of capital
	The measure of the firm's market risk (also referred to as the firm's Beta)	The propensity of management to invest in projects with a measure of risk without adversely impacting on the firms market position or share price

Source: Adapted from Chatterjee and Segars (2002:18).

This class of measures evaluates the firm's attitude toward innovation, learning and investment. Together with new products from innovation, collaborative technology should improve the effectiveness of the creation and storage of new information and knowledge. The firm should also have an improved sense of "knowing what it does not know" (Chatterjee & Segars, 2002:18; Skyrme, 2000). Return on investment, reported here as net income/total assets,

is a measure used where collaboration is expected to contribute towards the growth of an industry, and where firms can enter markets with fewer commitments to assets, thus improving the return. How the firm effectively manages risk, also requires measurement. By the establishment of ventures (such as those of the respondents in this survey) for example, the risk profile of the key investor or founder may set the risk/return framework for the organisation. Management, through the instruction of the key investor, should be able to invest in risk projects without adversely affecting capital structure. Some of these classes have been catered for in the strategic architecture construct. Learning is reflected, for example, in the dimension of knowledge management. Investment return is captured in the performance construct.

6.4.4 Measures of strategy performance

Metrics for networked economy ventures have been developed by other researchers (Hax & Wilde, 2001b). The metrics in the Chatterjee and Segars typology, gauge the electronic viability of the firm, evaluate its competitive ability in the electronic marketplace, and measure the collaborative viability of market opportunities. Their classification encompasses similar measures as presented by Hax and Wilde (2001b) and summarised in Table 6.7.

Table 6.7: Performance metrics for business drivers

		Strategic Positioning		
		Best product	Total customer solutions	System lock-in
Business processes	Operational effectiveness (cost drivers)	<i>Best product cost:</i> Cost performance <ul style="list-style-type: none"> • Unit cost • Life cycle cost • Variable and total cost Cost drivers Quality performance Differentiation	<i>Best customer benefits:</i> Customer value-chain <ul style="list-style-type: none"> • Total cost • Total revenue and profit Customer economic drivers Impact on customer profit due to our service being better than that of our competitors	<i>Best system performance:</i> Description of system infrastructure Total systems cost Complementor returns Complementor costs System performance drivers
	Customer targeting (profit drivers)	<i>Target distribution channels:</i> Product market share Channel cost Product profit <ul style="list-style-type: none"> • By product type • By offer • By channel Profit drivers	<i>Target customer bundles:</i> Customer share Customer retention Profitability by customer <ul style="list-style-type: none"> • Individual and by segment Customer bonding – switching costs	<i>Target system architecture:</i> System market share Our share of complementors <ul style="list-style-type: none"> • Percentage of investments tied to our proprietary standards Our profit by complementor
	Innovation (renewal drivers)	<i>Product innovation:</i> Rate of product introduction. Time to market Sales contribution from new products Cost of product development. Research and development/sales	<i>Customer service innovation:</i> Relative involvement in customer value-chain Percentage of product development <ul style="list-style-type: none"> • From joint development • Customised Current compared to potential bundling	<i>System innovation:</i> Switching costs for complementors and customers Rate of product development Cost for competitors to imitate standard

Source: Hax & Wilde, 2001b:19, 21

In contrasting these two approaches, it can be seen that Hax and Wilde (2001b) focus on business processes and strategic positioning, whereas the emphasis of Chatterjee and Segars is more on market performance, collaboration and readiness. There is reasonable correspondence on most measures, with the possible exception of lock-in and closeness to the complementor. Hax and Wilde's "softer" approach to customer bonding contrasts with the "harder" framework of Porter (1980), whose positioning model suggests the selection of an attractive industry in which a business can excel. His five-forces approach is built around the "harder"

forces of rivalry and competition. Hax and Wilde (2001b) see competitor lock-out being enhanced through contracted distribution channels and patents. Proprietary standards also contribute to maintaining the firm's competitive edge. It may be advantageous to add another dimension to Chatterjee and Segars' (2002) market performance, detailed in Table 6.4, which considers the dimension of retention and includes selected lock-in metrics from Hax and Wilde (2001b).

The strategic scope of Hax and Wilde, discussed above, considers performance from the view of the customer, and suggests measuring how a firm contributes to their value proposition. More empirical data or studies from which they have drawn their conclusions, would be useful. These authors may well be presenting an idealistic viewpoint of an interesting concept. Their premise, however, that strategy should emphasise bonding rather than rivalry (Hax & Wilde, 2001b:27), is refreshingly different, endorsed by others (Chen, 2001:244; Brandenburger & Nalebuf, 1995) and remains consistent with the strategic architecture dimension of customer-centricity.

6.4.5 Website performance measures

Business information technology practices are no longer confined to intra-organisational islands of automation. They have become open, collaborative, extended and web-centric systems, which have thrust information technology performance management into the spotlight. Management is realising that optimally performing systems are part of the success drivers and need measurement.

There are measures of performance available specifically for websites, that include, for example, application response time. Over time, these have become measures of revenue, market performance and profitability. There are also specific systems technologies that are dedicated web-enabled performance measuring. These combine real-time analysis with predictive insight, allowing flexibility and permitting informed decisions to be made. Such systems facilitate the correlation between information technology systems and business performance.

There are proprietary systems from application service-providers such as Clickstream, Fireclick, WebSideStory, Keynote Systems and others. Their goals include monitoring the stickiness of web visitors, churn and conversion rates and loyalty indices. Specific navigation-

related website performance metrics do not reflect overall operational performance – they are a means to an end. The dimensions of the performance construct may include measures such as conversion rates and repeat buyer behaviour. These and other similar measures may well be available to respondent businesses as a result of the application of one or more technical measures.

In the early stages of website performance evaluation, simple measures such as counting the number of hits on a site provided some indication of customer interest. Because of its ease of application, and simple measure of market activity, it can be argued that this type of measure may be found in new online firms or start-up businesses. Hits tend not to be meaningful measures of website effectiveness since if a page consists of ten graphics, plus text this could, in some systems, be recorded as eleven hits. Page impressions and site visits are better measures of site activity (Chaffey, 2002:509).

Chaffey (2002:507) suggests that the measurement of e-marketing performance is a useful aspect of managing an e-commerce initiative. Management need confirmation that an investment is meeting its objectives. They may then need to monitor a site. This author proposes that the measurement process be related to strategy. Control is then achieved through performance measurement and diagnosis in order to compare actual performance relative to the target objectives to identify variances and suggest corrective action. His categories are related to different levels of marketing and include strategic, profitability, budgetary and efficiency controls. He characterises good metrics as specific, measurable, actionable, relevant and time-oriented. He suggests the use of log file analysis packages, such as Webtrends, which support metrics such as:

- Page impressions;
- Entry and exit pages;
- Path or click-stream analysis;
- User (visitor) sessions;
- Unique users (visitors), the number of unique visitors to a website within a set period;
- Visitor frequency report (repeat visitors);
- Session duration or the length of time a visitor spends on a site (a session ends after inactivity for a time set in the analyser preferences, e.g. 30 minutes) and page duration;

- Country of origin;
- Browser and operating system used; and
- Referring URL and domain (where the visitor came from).

Later approaches use different browser-based measurement systems that record access to web pages every time a page is loaded into a user's web browser, by running a short script or program from the web page. This approach is potentially more accurate than server-based approaches. Such a metrics approach counts pages every time they are viewed by customers by inserting a small piece of code into each web page, that runs automatically every time the page is loaded into the browser by the user. The code then sends details about the page views to a remote server.

Such technical metrics have value for management but, unless used in conjunction with other measures, may have limited benefit to the business's performance. They are more concerned with the process of data-gathering. Chaffey (2002:514) suggests different categories of e-commerce metrics with typical technical measures. These are summarised in Table 6.8.

Table 6.8: Categories of technical e-commerce metrics

Metric	Purpose/process	Specific measures
Channel promotion	Origination of website users	Percentage of all referrals (or visitors) Cost of acquisition Contribution to sales or other outcomes
Channel buyer behaviour (on-site registration, user profiles)	Content accessed Time when visited How long on site New leads or sales generated	Home page interest (measured by home page views/all page views) Stickiness (page views/visitor session) Repeats (visitor sessions/visitors)
Customer satisfaction (with the online experience)	Online questionnaires Focus groups Interviews	Customer satisfaction indices (ease of use, site availability and performance, and e-mail response)
Channel outcomes	Number of sales, number of leads, conversion rates and targets for customer acquisition and retention are set, and compared to other channels	Conversion rate (visitors to purchase) Conversion rate (visitors to registration) Attrition rate (visitors lost at each stage of a site visit)
Channel profitability	Proportion of sales via the channel	Breakdown visits into: Site visits Product information visits “Add to cart” processes “Make purchase” processes

Source: Chaffey, 2002:514

These categories provide useful insights into measures of business performance. The strengths are in marketing performance using conversion rates and system / operational efficiency as measured by transaction value. There are two general shortcomings of the e-business metrics: their ill-defined link to strategic performance; and, their lack of enterprise-wide integration. These deficiencies are addressed by the scorecard approaches, discussed in the next section.

6.4.6 The balanced scorecard

The balanced scorecard is an integrated metric used to translate organisational strategies into objectives, and providing metrics to monitor strategy implementation. Developed and popularised by Kaplan and Norton (2000; 1996a; 1996b) this approach is used to translate vision and strategy into objectives. It was developed partly as a response to the prevailing over-reliance on financial metrics, and the tendency for such measures to be retrospective rather than looking at future potential (Chaffey, 2002:187). The balanced scorecard incorporates both financial data and operational measures, which include customer satisfaction, efficiency of internal processes, the organisation's innovation and improvement activities, and staff development. This approach is in line with the view motivated earlier in this chapter regarding the measurement of business performance (Venkatraman & Ramanujam, 1986). The main components of the balanced scorecard are:

- Customer concerns – which include time, quality, performance, service and cost;
- Internal measures of business processes that impact the most on customer satisfaction – cycle time, quality, employee skills, and productivity;
- Financial measures – such as turnover, costs, profitability and return on capital employed; and
- Learning and growth, innovation and staff development. Innovation can be measured by change in value over time, employee value, shareholder value, percentage and value of sales from new products.

In their approach the authors find a balance between financial and other domains of the business, including internal processes and customer responses. To some degree their approach adds perspective to a financial focus while providing managers with an early detection system permitting corrective measures before the realisation of poor financial results. The model is based on the strategy of the firm from which it derives metrics. The functional area and typical measures used are summarised in Table 6.9.

Table 6.9: Balanced scorecard

Functional area	Purpose and measures
Financial metrics	Financial performance indicators such as revenue, revenue growth, gross margins, operating income, net margin, earnings per share, and cash-flow.
Customer metrics	Customer relationship management performance assessment, including market share, customer acquisition, customer satisfaction, and customer profitability.
Internal business process metrics	Internal operations of critical value-adding activities for customer satisfaction and enhanced shareholder value, such as innovation metrics, customer need identification and needs-driven new product development. Operations metrics for entire supply-chain performance and after sales service metrics, including return processing, guarantee processing, query response time, and payment processing.
Learning and growth	Employee performance, selection, training, retention, and satisfaction. Information systems, infrastructure measures, such as timeliness, accuracy and utility of data.

Sources: Kaplan & Norton, 1996a:54; Rayport & Jaworski, 2001:260

The balanced scorecard has shortcomings when applied to firms operating in the networked economy. This measure, while quite appropriate to traditional firms, is less applicable to online businesses. Below are some identified shortcomings (Rayport & Jaworski, 2001:263):

- There appears to be no clear definition of strategy or business models in the measure that purports to be based on the strategy of the firm. Without such definition, it is difficult to assess whether the metrics accurately capture the critical aspects of the business strategy or the business model.
- It is not clear where organisational capabilities or resources are located in the framework. These capabilities and resources span a variety of domains, including internal business processes, customer relationships, partnerships, and the unique selection of markets. Capabilities can also extend beyond internal business processes.
- It is unclear where strategic partnerships reside in the framework. These alliances are critical for a firm's ability to compete in the networked economy.

The balanced scorecard is a useful starting point for a set of metrics assessing effectiveness and efficiency of networked economy organisations. Each of these four above areas has objectives defined by management teams which include targets, measures and initiatives very necessary for any organisation. The scorecard does not fixate on outcomes, but also considers measures that are performance drivers positively affecting outcomes such as investment in technology or employee training. The balanced scorecard has also been applied in aligning business and information systems strategy (Van Der Zee & De Jong, 1999), but needs to be more inclusive for effective use in the networked economy.

6.4.7 The performance dashboard

In a turbulent environment, adaptation and agility characterise successful electronic businesses. To effectively assess progress of a networked economy venture, business-specific metrics are required that more precisely reflect the strategic performance of such ventures. Rayport and Jaworski (2001:270) propose the application of their performance dashboard model, which purport to overcome the shortcomings of the balanced scorecard. This model is divided into five desired outcomes and corresponding metrics. The metrics are then mapped with leading and lagging indicators of performance, leading to calculated targets. Once performance measures have been calculated strategies can be evaluated and formulated.

Table 6.10: Metrics desired outcomes and focus

Metric type	Focus of the measure
Opportunity (environmental)	Opportunity metrics focus on the conditions in the customer and competitor environments
Business model	Business-model metrics include topics related to the value cluster, market offering, resource system and capabilities, and partnerships.
Branding and implementation	Branding and implementation metrics focus on supply-chain performance, organisational dynamics, and marketing communication effectiveness (including branding)
Customer	Customer metrics focus on output measures that relate to the customer experience such as overall satisfaction, average dollar amount of purchases, stickiness, as well as metrics that relate to the customer interface
Financial	Financial metrics capture the financial performance of the company, including such measures as sales, profit, and margins.

Source: Rayport & Jaworski, 2001:265-6

This framework is supported by Turban, *et al.*, (2002:477) who find it “more suitable” than the balanced scorecard of Norton and Kaplan. It also provides useful pointers to the required dimensions of the performance construct. The performance measures discussed thus far are those that have focused on the performance of the firm. There are others that view the firm from an investor perspective. These models provide a broader, external valuation of performance.

6.4.8 Enterprise valuation and business model appraisal

Afuah and Tucci (2003:145, 161) discuss performance under two headings – the valuation of a business and the performance of the business model, but view the ultimate measure of performance as the value placed on an enterprise by an investor. It is the result of a complex set of criteria, ultimately determined by “the cash inflows and outflows – discounted at the appropriate interest rate ... that can be expected to occur during the remaining life of the asset” (Afuah & Tucci, 2003:145). These researchers suggest measures of cash-flow, price-earnings ratio and price-earnings growth ratios in their method of valuation.

Cash-flow interpretation is very different for an online firm. Caution is urged before the indiscriminate application of cash-flow or working capital techniques, or when using certain accounting ratios for determining value. These measures and interpretations are quite different when applied to online or offline firms. Comparisons become unreliable and meaningless. Amazon.com, for example, before building warehouses, carried no stock. Customers placed orders and paid immediately, often by credit card. Amazon collected the cash. They then ordered the book from a wholesaler or publisher who delivered it directly, almost immediately, to the customer but were not paid for the product by Amazon until 30 to 45 days later. Effectively, Amazon retained the customer's money for more than a month before paying its suppliers, and thus created negative working capital for that specific transaction, providing the business with a positive cash-flow. Even after building its own warehouses, Amazon kept its stock turn to an average of two weeks. With growth, as Amazon doubled its sales, it did not have to double the number of physical outlets as would a bricks-and-mortar competitor, because it had none (Afuah & Tucci, 2003:146). Furthermore, traditional businesses cannot disintermediate their supply and value-chain as readily as an online venture. Disintermediation has been discussed in Section 4.5.

The performance review of business models, suggest Afuah and Tucci (2003:160), has two key purposes: to enable effective business model comparisons to be made when making choices about model components and linkages, and to enhance competitor analysis with an appraisal of their business models. The model of Afuah and Tucci (2003:161) considers performance on three levels: profitability, profitability prediction and business model component attributes. These are summarised in Table 6.11.

Table 6.11: Business model appraisal levels

Level in the business	Metric
Level 1	Profitability measures <ul style="list-style-type: none"> • Earnings • Cash-flow
Level 2	Profitability predictor measures <ul style="list-style-type: none"> • Margins • Market share • Revenue share growth rate
Level 3	Component attribute measures <ul style="list-style-type: none"> • Positioning • Value • Scope • Price • Revenue • Activities • Implementation • Capabilities • Sustainability • Cost structure

Source: Afuah & Tucci, 2003:161

The profitability measures of Afuah and Tucci (2003:161) are driven by their belief that the fundamental purpose of a business model is to make money, therefore they maintain there is no “better way to measure how good a business model is than to compare its profitability to that of its competitors.” They state that any one of many profitability measures can be used, and give an example of earnings and cash-flows “... because analysts use them most frequently in valuing businesses.” Their profitability indicators use profit margins, revenue market share and revenue growth rate as predictors, since these are “comparable to industry competitors and a firm has a competitive advantage if it scores higher in these measures than do its competitors”. The business model component measures, although not as objective or as easily available as the above measures, have as their source of value the business model.

The approach of Afuah and Tucci (2003) has some limitations, however, when compared to the performance measures considered earlier, such as the performance dashboard of Rayport and Jaworski (2001:270) or the performance measures linked to strategy such as that of Hax

and Wilde (2001b). The Afuah and Tucci valuation model using cash-flows, requires cautious application since, as pointed out earlier in this section, comparisons are likely to be made with bricks-and-mortar businesses resulting in incorrect conclusions. Secondly, cash-flows are short-term by nature. If discounted, given the short and turbulent history of web-enabled business, what discount factor should be applied? As an indicator of present and future performance, the value of Afuah and Tucci's business model component measures is also doubtful. In the discussion on business models (refer to Section 4.8) academics and researchers concur that there is no agreement on an acceptable definition of a business model. For the model of Afuah and Tucci to be used effectively, their definition would have to be followed – an unrealistic expectation at this stage in the evolution of the business model as a concept.

6.4.9 Performance – the commentary of other authors

There are other authorities who have viewpoints similar to those discussed above on measuring the performance of web-enabled businesses. Kalakota and Robinson (2001:368) propose the application of key performance indicators, similar to the scorecard approach of Kaplan and Norton (1996b) and the performance dashboard of Rayport and Jaworski (2001). Turban, *et al.*, (2002) also endorse the scorecard approach. Chen (2001:244) proposes the application of Hax and Wilde's (2001b) delta model for effective performance measurement. In the South African situation, Bothma (2000:254) suggests the use of financial measures and discusses performance in terms of return on investment. In the associated field of information technology, Ward and Peppard (2002:422) find traditional financial analysis techniques, notwithstanding their controversial application, still in common use. They cite several other studies that draw similar conclusions. Barrow (2000:160) suggests the application of ratios such as marketing and research and development costs as a percentage of sales. He proposes these be complemented with traditional financial measures of, *inter alia*, growth, profitability, efficiency and margins.

The similarities amongst these authors are summarised in the next section. Once tabulated, certain commonalities emerge. These commonalities, when viewed in conjunction with the required properties of the dimensions, will be combined with some traditional measures to arrive at appropriate dimensions of the performance construct.

6.4.10 Performance measures – a summary

Some of the metrics discussed above have already been applied in the development of the strategic architecture construct. Rather than forming part of the performance construct, some of the measures have been incorporated into the dimensions of strategic architecture.

Table 6.12: Authors and performance measures 1986 – 2001 (summarised)

Author/s	Chakravarthy	Murphy	Kaplan and Norton	Rayport and Jaworski	Hax and Wilde
Date	1986	1996	1996	2001	2001
Title	Performance measures	Performance measures	Balanced scorecard	Performance dashboard	Delta model / e-business metrics
Source	Strategic management	Entrepreneurial studies	Research/ conceptual	Research/ conceptual	Research/ conceptual
Key focus or measures	Profitability Relative market position Change in profitability and cash-flow Growth in sales and market share.	Efficiency Growth Profit and size Liquidity Success/ Failure Market share Leverage	Financial metrics Customer metrics Internal business process metrics Learning and growth	Opportunity (environmental) Business model Branding and implementation Customer Financial	Operational effectiveness Customer targeting Innovation Best product Customer solutions System lock-in

The older performance measures, as shown in Table 6.12, tended to have a broad business focus. Hax and Wilde (2001a) were among the first to begin to address the need for measuring e-commerce performance. As e-businesses became more entrenched so further measures, more relevant to networked economy firms, began to emerge. These are summarised in Table 6.13.

Table 6.13: Authors and performance measures – recent (summarised)

Author/s	Chatterjee and Segars	Chaffey	Afuah and Tucci	Other authors
Date	2002	2002	2002	2000 – 2002
Title	E-business metrics	Channel performance	Performance levels	Performance measures
Source	E-business practice	Research/ conceptual	Research/ conceptual	Research/conceptual
Key focus or measures	Marketplace performance Business model digital readiness Collaboration measures	Website performance Channel promotion Channel buyer behaviour Customer online satisfaction Channel outcomes Channel profitability	Profitability Profitability prediction Business model component	Kalakota and Robinson: Balanced scorecard and performance dashboard Turban, et al.: Balanced scorecard Chen: Delta model Bothma: financial measures (return on investment) Ward and Peppard (IT industry): Financial analysis techniques

The two tables summarise the relevant literature on performance measurement. It will be noticed from the preceding discussion that authors and researchers find traditional financial measures still very broadly applied in practice. Before the relevant dimensions can be formulated into a suitable performance construct, traditional measures and their limitations must be discussed, beginning first with an issue very relevant to knowledge businesses – how to account for the value of “soft” assets such as skills, technologies and patents.

6.5 COMPLEXITY FROM INTANGIBLE ASSET PERFORMANCE

“The value of what you know can only be seen in what you do.” (Klas Mellander, Chief Designer of Celemi as quoted by Skyrme, 2001:1). Tangible assets such as land, capital and factories were the prime inputs into economic value creation in the agrarian and industrial societies. Knowledge, although important, was not historically valued as a critical asset. Traditionally, value in organisations has been created through the deployment of capital and labour; but today other factors are making substantive contributions. The value of skills, organisational structures, processes, culture, intellectual property and similar factors, collectively referred to as intangible assets, can no longer be considered trivial. Such assets are not necessarily visible, but their impact can be seen through specific observable changes, for example, in the firm’s market value or in its production of real returns. This phenomenon is demonstrated in a study (Brynjolfsson, Hitt & Yang, 2002) where positive correlations were observed between market valuation and a firm’s investment in computers and associated information technology.

The contribution of intangibles to corporate value is most often demonstrated by the difference between the market valuation of a firm and its net asset value. As an example, Skyrme (2001:2) cites the 1999 balance sheet of the Glaxo Wellcome pharmaceutical company showing \$10 billion in assets; yet its value as expressed by its market capitalisation, exceeded \$50 billion. Much of the difference is accounted for by intangible assets such as patents, research and development products and the ability of the firm to apply its scientific knowledge.

Increasingly, the source of value in products such as computers, software, cellular phones, pharmaceuticals and even branded consumer products, has progressed from physical content to knowledge content. Concomitantly, an increasing share of corporate wealth is becoming sourced from intangible assets. Patents, copyrights, organisational and human capital and goodwill have traditionally been considered intangibles. With the advent of the internet, assets such as customer or employee satisfaction, alliances, supplier relationships and intellectual capital, are becoming real sources of value in both corporations and in the economy (Welborn & Kasten, 2003). Such intangibles are moving toward becoming the dominant drivers of economic activity and wealth as corporate processes evolve from manufacturing to being information-based.

There are several accepted methods of measuring intellectual capital (Skyrme, 2001:18). Sveiby's (1997) intangible assets monitor considers three categories of intangible assets – customers (external structure), organisation (internal structure) and competence, and each is further subdivided into efficiency, stability and growth/renewal indicators. Other intellectual property measurement systems include the proprietary Skandia Navigator, and the intellectual capital index (Skyrme, 2001). These methods begin by identifying the intellectual assets and grouping them into categories, such as human capital, the knowledge that resides in the minds of individuals; structural capital, such as processes, information systems, databases; and customer capital, comprising, *inter alia*, customer relationships, loyalty and brands.

Intangible assets, even when having no physical or material substance, are regarded as possessing value because of certain rights and privileges which they confer by law on the owner of the asset (Libby, *et al.*, 2001:447-8). Latterly, further corporate investment in intangibles such as research and development, franchises, brand development and human capital enhancement is growing at a substantially faster rate than investments in tangible assets. Throughout all developed economies, such assets are fast becoming primary earnings contributors.

Measuring the contribution of intangibles poses a complex challenge to the accounting profession (Copeland, Koller & Murrin, 1996). Intangible assets are present in every business enterprise, yet predominantly only tangible assets, with the possible exception of those intangible assets purchased in an acquisition, have generally been accounted for on the company balance sheet (Libby, *et al.*, 2001). The accounting treatment of intangibles, by immediately expensing such items, has had an even greater impact on the income statement, since it makes it practically impossible for potential investors to effectively assess the rate of return on such assets. Changes over time in the efficiency of the firm's investment activity, or shifts in the characteristics of intangible investments, such as from long-term or basic research to short-term development, or from product development to cost-reducing processes, cannot be reliably measured. Further complications include problems with the determination of the value of the firm's intangible capital and the expected lives of such assets. Furthermore, both internal and external performance evaluation and monitoring of investment in intangibles appear hampered by the absence of adequate information and accounting guidelines.

Traditional measures of value have tended to equate the quality of a firm's performance to the effectiveness with which it applies its financial resources. Such monetisation measures, frequently used in the information technology arena, include calculated net present value, internal rate of return, and others. These valuation processes tend to focus on the more readily quantifiable financial aspects of the firm, and do not adequately account for the impact, discussed above, of the intangible *accoutrements* associated with the firm's offering. In recent years intangible assets that have attained greater significance due to the advent of the web, include market share, research and development outputs and first-to-market benefits. The knowledge economy, by definition, demands more attention to the value of the contribution of such assets.

Measures of business performance may not be complete without certain financial figures. An e-commerce venture remains an accounting entity that needs to comply with statutory regulations. Notwithstanding accounting for intangibles, good governance and legislation require businesses to maintain books of account and report accordingly. It is important to know what those traditional measures are and where their limitations lie in the context of their application. Moreover, it is often necessary in practice to apply some of these calculations for reasons of completeness, historical precedent or for reporting in purely financial terms for statutory purposes. Traditional measures are reviewed in the next section for their suitability for inclusion, or rejection, in the development of the performance construct.

6.6 TRADITIONAL MEASURES OF VALUE

Historically, measures of value consisted of purely financial calculations when relating the value of an investment, for example, in information technology or a business unit, to its concomitant return. The methods, especially when applied in times of high inflation, often incorporate factors that discounted the time value of money. These measures are generally simple, readily calculated and easily comprehensible. In the past they usually sufficed as a reasonable measure of valuation. Their popularity was undoubtedly a result of the ease with which the data could be extracted, and the calculations performed, compared and understood. Many of these measures are still in use today, often applied to businesses and interpreted in combination with other measures. It is important to note that some of these measures are also used to assess project viability. One of the most popular measures is the cost/benefit analysis (Remez & White, 1999).

6.6.1 Cost/benefit analysis

Benefits are the specific advantages, profits or gains attained as a result of a deliberate act. They represent an investment's return. A benefit is what flows from an investment that enables a firm to accomplish its purpose or enhance its mission. Focusing on improved outcomes rather than on the technology, is one of the best ways to ensure that the expenditure of any resource furthers the firm's mission. Costs are the incurred expenses of an investment and its direct or indirect capitalised costs. Direct costs include materials, labour and other expenses having a direct bearing on the production of a specific product or service. Indirect costs include rent, utilities, insurance and indirect labour. Once all costs and benefits have been identified and numerated, they must be integrated meaningfully into the equation. The calculation of the cost-benefit analysis hinges on the quantification of all variables – some may be more difficult to identify and monetise than others (Libby, *et al.*, 2001:742).

As with any financial tool, a few shortcomings of such an analysis must be acknowledged and managed. Because the calculation hinges on the quantification of all variables, it can be tedious, and at times impossible to successfully monetise every element to be factored into the analysis. Remaining objective when considering the elements to be factored into the analysis, is a challenge since personal judgment must not cloud decisions.

6.6.2 Net present value (NPV)

NPV is a commonly-used traditional tool for analysis, incorporating the time value of money. In practice, other instruments are useful but do not provide as much insight. This measure discounts monetary costs and benefits over a period of the project life. NPV enables financial comparisons to be made that may have widely disparate cash-flows. It permits objective evaluation of projects regardless of scale differences or the existence of capital rationing, and can be used to compare independent or mutually exclusive projects.

For each period of the analysis, cash inflows, or benefits, and cash outflows, or costs, are tallied and summed to arrive at a net value. This net cash-flow is then multiplied by an appropriate factor to arrive at the discounted cash-flow (DCF) for each year. NPV is the net sum of these discounted cash-flows over the period of analysis. For meaningful interpretation, sound estimates of project costs and benefits, the selection of an appropriate discount rate, and identification of the timing of cash receipts and payments are required.

To determine how much an investment's return (or NPV) could change in response to a given change in an independent input variable with all other factors held constant, a sensitivity analysis may be conducted. This technique can be used on one variable at a time, or on a group of variables, then referred to as a scenario analysis. Typically, returns are more sensitive to changes in some variables than to changes in others. The expected value analysis process involves the assignment of probability estimates to alternative outcomes, and summing the products of the various outcomes (Correia, Flynn, Uliana & Wormald, 1993; Libby, *et al.*, 2001).

6.6.3 Internal rate of return (IRR)

The internal rate of return is the discount rate that equates the present value of the expected future cash-flows to the initial cost of the project. It is the NPV solved for a discount rate that causes NPV to equal zero. A favourable IRR is one that ensures the benefits provided by an investment exceed the organisation's weighted average cost of capital (Remez & White, 1999).

6.6.4 Return on investment (ROI)

The ROI ratio is used to measure the effectiveness with which management is deploying the assets owned by the business. It is a percentage that equals the total return of the book value of the assets, for the timeframe of an analysis, divided by initial and subsequent investments. ROI may be stated as either discounted or non-discounted (Correia, *et al.*, 1993:349). This measure captures operational efficiency, and is an indicator of how well an asset is utilised.

6.6.5 Discounted payback period (DPP)

DPP, normally stated in years, represents the length of time required for net revenues to recover the cost of the investment on a discounted basis. This metric, although still used in some quarters, is losing its place as a primary valuation factor to other methods that foster broader and longer-term views. DPP does provide a measure of project liquidity and can be of use as an indication of risk. A project whose return is realised rapidly is seen to present less risk than longer-term projects (Correia, *et al.*, 1993:348-9). The shortcoming of this method is that it ignores income beyond the payback period (Weston & Brigham, 1978:292).

6.6.6 Financial metrics – a cautionary note

The measures defined above are generally financial in nature. They do not generally allow for value from intangibles, non-financial contributors to profitability, or the benefits of business flexibility. Considering a business acquisition as an option, is becoming a process which is receiving more and more attention (Copeland, 2001:1-2). A further shortcoming is that returns-based measures such as ROI by their very nature encourage managers to develop a short-term perspective that could lead to underinvestment. A further detractor is the fact that neither earnings nor returns in practice correlate well with actual market value of companies. The issue is compounded by differences in the legal systems and tax structures of countries, which lead may result in incomparable numbers (Copeland, 2001; Remez & White, 1999).

There are several other traditional measures of performance which relate to market valuation. These include earnings-based measures such as earnings per share. As discussed before (refer to Section 1.2) however, the dot.coms commanded valuations from irrational investors that did not bear any relation to their performance. For this reason it was decided, until investment markets return to normality, that such measures would not prove suitable for inclusion as a dimension in the performance construct.

6.7 EMERGING MEASURES OF PERFORMANCE FOR E-BUSINESS

6.7.1 Real options – a measure of e-commerce performance

The financial measure, net present value, may just suffice as a measure of performance for a project that remains relatively unchanged over time, but it does not adequately deal with the elements of flexibility that need to be taken into consideration when valuing an e-commerce firm operating in the dynamic and turbulent networked economy. Traditional NPV calculations almost require an explicit renunciation of flexibility. The use of real options analysis (ROA) techniques is an approach to valuation which makes allowances for flexibility (Rayport & Jaworski, 2001:304).

The application of real options analysis to the evaluation of a business is often a superior process to NPV, since NPV may undervalue a potential project. Real-options analysis adds value by making allowances for management action. The process offers flexibility that allows for unforeseen events that impact on the value of a business. NPV makes no provision for the

value of flexibility in making future decisions that resolve uncertainty. Real-options analysis looks at the problem as a decision tree, permitting, if necessary, the development of an NPV with the right to defer a business decision, stopping the deferral process when the NPV of the business project – without the option to defer – exceeds the value of waiting (Copeland, 2001).

The value of a real option is influenced by the value of the underlying business, the exercise price or investment cost, the volatility of the business's value, time-to-maturity, risk-free interest rate and the cash-flows (Coff & Lavery, 2001; Taudes, Feurstein & Mild, 2000). Where economics could shut down a business venture if the marginal cost exceeds the marginal revenue, real-options analysis provides a realistic answer: The operation should be shut down only when the expected losses from continuing to keep operations open, is equal to or more than the fixed cost of shutting down. By using a real-options approach, management are better able to foresee events leading to more meaningful analysis, and ultimately, resulting in better investment decisions. Businesses can then be better equipped to revise critical decisions as a business progresses. Several researchers have written on the use of option models in IT investment decisions, including Dos Santos (1991) who expounds on an exchange option model for valuing an IS project, and Damodaran (2001:881-923) who includes relevant examples and calculations. The ROA methodology has application in the valuation of businesses and projects. In terms of defining a research construct, however, especially in the light of the required properties, it is less appropriate.

6.7.2 Proprietary metrics

There exist certain proprietary metrics offered by consulting groups that are applicable to measuring e-business performance. For purposes of sufficiency, some of these are given brief mention. Note that, given the emerging status and lesser sophisticated nature of the South African electronic commerce industry, few such measures are expected to be found in this market.

Economic Value Added (EVA) is a registered trademark of Stern Stewart and company, New York. It is a performance measure linked to the creation of shareholder wealth over time, calculated by taking the net operating profit less an appropriate charge for the opportunity cost of all capital invested in an enterprise. They posit EVA as an estimate of true economic profit, or

the amount by which earnings exceed or fall short of the required minimum rate of return that shareholders and lenders could get by investing in other securities of comparable risk (Stern & Stewart, 2003).

The treatment of capital is a distinctive aspect of EVA. Under conventional accounting rules, companies may appear profitable when in fact they are not. The cost of capital approach maintains that a business operates at a loss until it makes a profit greater than its cost of capital. EVA attaches a value to capital when it is employed. In essence, EVA values the wealth a business has created or destroyed for each reporting period. The concept of adding value has use in determining the value created by an enterprise. In the South African situation, for simplicity, use will be made of an alternative method, value-added per employee, used by the da Vinci Institute and the Department of Science and Technology in their Technology Top 100 awards programme (da Vinci Institute, 2003).

The Giga Group have developed their total economic impact methodology, which is “a holistic ROI approach that measures how a solution or initiative not only impacts on information technology but also on the company’s business units” (Giga Information Group, 2000). It enables organisations to identify and maximise the overall value of technology investments and to communicate that value in business terms. Cap Gemini have a measure called the value creation index (VCI) (Kalafut & Low, 2001). This methodology views intangibles as the most significant differentiating factor between successful and unsuccessful Initial Public Offerings (IPOs). The VCI measures the impact of key intangible asset categories on a company’s market value, innovation, quality, customer relations, management capabilities, alliances, technology, brand value, employee relations, environmental and community issues. As stated before, these proprietary metrics are not likely to have much application in South Africa. Since their methodologies are not in the domain of academic literature, they are not considered as having application in the scope of this study.

6.8 CONTROL VARIABLES

Cooper, Woo and Dunkelberg, (1989) caution against making broad generalisations on performance based upon specific samples. In order to effectively compare performance between different businesses, a common ground should be established. This is ensured by the inclusion of appropriate control variables. Another finding of the Murphy *et al.*, (1996) study was that

single measures of performance suffer from uncertainty, and suggest that combinations of variables may be more appropriate. As an example, return on equity (ROE) is the product of return on assets (ROA), a measure of efficiency, and total assets/equity, a measure of leverage. Thus, measuring performance as ROE alone, prevents a determination of whether high performance is due to operating efficiency or financial leverage.

In the empirical study that follows, it will be necessary to explore differences between groups of respondents to evaluate, for example, whether business size affects the relationship between strategic architecture and performance. Another issue may be whether pure-plays and hybrids have similar strategic architecture, or whether strategic architecture content is affected by a firm having offline roots. In probing correlations it may be necessary to split the respondents to investigate whether a positive correlation by one group is suppressed by the negative correlation of another group. These issues are dealt with in the empirical study. The research design conceptualises a strategic architecture that contributes to the performance of commercial web-enabled enterprises. It will control for the following variables:

1. Business parentage. E-commerce businesses, at their incorporation, may have their origin in one of two ways – as pure online ventures, or as hybrids that began as the offshoot of an offline firm. In addition, there may be online businesses that have established offline channels.
2. Business model. Knowledge of the type of business model may give some indication of e-commerce industry position when considered in the light of Timmers' framework (refer to Figure 4.7). Rappa's (2002) classification was discussed at length in Section 4.10.3.
3. Business size (employees). The number of full-time equivalent paid employees (where, for example, two half-day posts are equivalent to one full-time post).
4. Business size (turnover). The size of the business is an important variable. In order to test consistency of responses, therefore, size will be considered both in terms of employees (as in the previous section) and turnover measured in terms of South African Rand.

5. Online trading period. There may be differences between groups of respondent firms that are age-related. Controlling for how long the firm has been trading online should assist in evaluating these differences. This variable will also reveal trends in the number of firms established, annually, which will provide an indication of investor confidence. This variable is a reflection of the life-cycle of the business.

Failing to include controls could lead to biased relationships and result in the non-comparability of groups of respondents. Further, by failing to control for a business model could result in the belief that a relationship exists, when such a relationship might actually be due to different leverage or profit variability levels associated with the different types of industry. This situation was discussed in the previous chapters on strategy and business models, where being positioned in a structurally attractive industry may contribute to the success of a business (Porter, 1980).

The web-enabled business of the respondent, as measured for example, in terms of total assets or owners' equity, would be an indicator of investment if it is a true reflection of the actual assets employed by the venture. In the South African situation many respondents are likely to outsource all their technology and associated processes such as payments. By keeping their supply and distribution chains short, they could have little need for inventory, plant, machinery or warehouses. An example of a typical respondent in the empirical study, is likely to be the online wine retailer, Cybercellar (2003). This e-commerce company outsources all their web and e-commerce technology and place orders with wine estates who deliver, in most cases, directly to the customer. Their relevant costs are expensed rather than capitalised. Valuing the actual total assets owned by such a venture, is unlikely to provide a confident measure of the true size of the business. Notwithstanding the above argument, however, since there may be some value in its knowledge, return on investment will be used in the questionnaire as one of the items in the performance construct.

Controlling by industry has been an accepted method for traditional strategy researchers. In the case of e-commerce ventures, however, the South African domain is unlikely to provide sufficient depth within different industries. Most respondents are likely to be retailers. The small size of the market and its newness are not likely to produce sufficient respondents for meaningful sector comparisons. For example, there are only three online sellers of air tickets, and two or three online entertainment venue ticket vendors. The scope of the study (refer to

Section 1.5) does not explore sectoral performance, rather, it examines the linkage between a business's strategic architecture and its performance.

6.9 PRECAUTIONS IN THE MEASURES OF "SUCCESS" AND "FAILURE"

It is not possible to be exhaustive when looking for factors contributing to business performance. There are many extraneous considerations, or "noise", which occurs outside the scope of this study, and which could also impact upon the performance of a firm. As an example, the failure of the parent company, a situation over which management has no control, resulted in the demise of the internet-based 20twenty⁷ financial services venture (20twenty Bank, 2003) in South Africa. Other unforeseen events, such as failure due to governance breakdown as observed in the electronic businesses WorldCom, also fall outside this study.

Care must therefore be taken in considering success or failure as performance dimensions. Failures pose two challenges. The lack of data on failed firms can create a restriction of range problem, since by studying only survivors the values for some measures of performance could be biased. The second challenge is how to actually measure success versus failure. Care must be taken to ensure that firms are appropriately classified. Firms may disappear (be sold by the owner) but remain successful. It is important to note that survival is not necessarily evidence of success, but remains a consideration.

6.10 IMPLICATIONS FOR THE STUDY

Since, for the reasons given above, it is not possible for one single dimension to appropriately serve the research questions, Murphy (1996) proposes that rather than limit the number of measures used, a study such as this one should recognise that there may be multiple dimensions of performance representing different options facing management. Actions undertaken to improve performance on one dimension may well depress performance on another dimension, and may have no effect on others. For example, many firms when first appearing on the web, seek to expand market share and grow online communities which may require funds that, at least temporarily, have a negative impact on profitability. In the turbulent context of

⁷ The business and licence of this bank was purchased on 1 August 2003 by Standard Chartered, who is using it to enter the South African retail banking industry. A reason given for its purchase was its "innovative approach to money management and a customer-fanatical focus that appeals to the discerning 21st century customer" (20twenty Bank, 2003).

the internet business domain, such situations can change rapidly. This study proposes the use of a single construct of performance with dimensions and items derived from the literature. Murphy, *et al.*, (1996) advise being explicit about the type of performance involved. A high performing firm could be categorised by any one of several measures. They caution against using ambiguous phrases such as “high/low performing firm”. It is advisable to use the more specific aspect of performance analysed in the study, for example, “high/low growth firms” or “high/low profitability firms”. This comment is duly noted in the context of this dissertation.

The performance dimensions of the dependent variable construct need to be cognisant of the exigencies of electronic businesses. The difference between the data used in the Murphy study (1996) and the web-enabled businesses of today is that, following the advent of the internet, a number of new metrics have been developed by practitioners and academics which could be more relevant to evaluating the specific performance of commercial web-enabled ventures. In order to explain performance of such firms, it is necessary to consider the resources they use and base appropriate metrics on determining the efficiency with which these assets are applied. Such measures of necessity may go well beyond the scope of traditional calculations, and begin by placing more emphasis on the contribution of intangible assets to the performance of a business.

6.11 THE SELECTION OF BUSINESS PERFORMANCE INDICATORS

The metrics discussed above and the logic behind the development of their application contribute to the development of a performance measurement construct required to operationalise the performance of commercial web-enabled enterprises. Business performance, as discussed before (refer to Section 6.2), is a subset of operational effectiveness. The domain of business performance consists of two constructs, financial performance and operational performance (Venkatraman & Ramanujam, 1986). The need for the inclusion of both financial and business dimensions was argued, and the importance of relating metrics to electronic business motivated. The different business and financial metrics have been reviewed and the development of dimensions is now possible.

A review of the performance measures of the authors as summarised in Table 6.12, highlights two classes of measures: pre-internet (before 1998) and post-internet (after 1998). Both classes have application in describing the performance of any business. The post-internet

class of measures, if applied to pre-internet business ventures, would simply not show performance differences. The common measures that exist predominantly between the traditional, pre-internet authors are operational efficiency, financial profitability, growth in business turnover and market, market performance and customer trends. The post-internet authors, while acknowledging the value of earlier measures, extend performance measurement to the networked economy firms by the addition of metrics that more readily reflect the characteristics of web-enabled businesses. As an example, Chaffey's measurement framework (Chaffey, 2002:508), examined in more depth later, motivates the inclusion of certain networked economy-specific performance indicators that are in common use. Chatterjee and Segars (2002) in their overview of contemporary practice and trends, extend Chaffey's measures further and identify the specific items and their calculations. In the evaluation of their metrics, two specific items capture the most critical activities: Regardless of the number of visitors to any site, it is purchases that drive cash-flow, which is reflected in the entrepreneurial literature and important for performance. The second measure of the e-commerce metric dimension is the growth in average transaction value. This measure again reflects the matching of the infrastructural investment to business requirements (a key feature of the dimension of digital spontaneity in the strategic architecture construct). These two measures are easy to calculate and are most likely of all the e-business measures to be used by the local market.

Finally, the scope of the study covers the South African electronic commerce domain, so ideally the construct should have some form of regional relevance. Bothma (2000) suggests the application of certain ratios for evaluating performance of local firms. One measure deployed by the da Vinci Institute and the South African Department of Science and Technology, for use in evaluating the performance of the Technology Top 100 companies who become eligible for an annual award (da Vinci Institute, 2003), calculates the "average employee value added" of a productive enterprise. It is calculated as total turnover less the inputs "bought in" (such as raw materials and outsourcing costs), divided by the total number of employees.

The most often cited measures of performance, plus those discussed above, form the dimensions of the construct for the performance of commercial web-enabled enterprises which, together with its most commonly cited measures, is detailed in Table 6.14.

Table 6.14: Dimensions of the performance construct and its measures

Functional origin	Dimension	Measure
Financial	Efficiency: The measure of the firm's ability to convert resources into outputs and provide a return to its investor/s.	Return on assets (net profit/total assets)
		Growth in return on assets
	Profitability: The financial return paid by the firm after all operating expenses have been met.	Net profit margin
Business	Growth	Turnover
		Growth in net profit margin growth
	Value added	Value-add per employee [calculated as: turnover-"bought in" (such as raw materials, outsourcing)/total number of employees]
		Growth in value-added per employee
	Market and customers	Market share growth
		Customer growth
	e-Commerce metrics	Conversion to purchase ratio (electronic purchases/site visits)
		Transaction value growth

The items in Table 6.14 are the basis of the performance questionnaire and are operationalised in Table 6.15.

Table 6.15: Performance construct dimensions, measures and items

Measure	Source	Item
CONSTRUCT – BUSINESS PERFORMANCE		
Efficiency	Chatterjee & Segars, 2002; Murphy, <i>et al.</i> , 1996	Return on assets (net profit/total assets) over the past 3 years
Efficiency	Chatterjee & Segars, 2002; Murphy, <i>et al.</i> , 1996	Return on asset growth over the past 3 years
Business growth	Hackney & Burn, 2002; Kettinger, <i>et al.</i> , 1994; Venkatraman, 1989	Turnover has shown positive growth over the past 3 years
Profitability	Damodaran, 2001; Hax & Wilde, 2001b; Venkatraman, 1989	Net profit margin
Profitability growth	Hackney & Burn, 2002; Kettinger, <i>et al.</i> , 1994; Venkatraman, 1989	The net profit margin growth over the past three years
Productivity	Brynjolfsson, <i>et al.</i> , 2002; da Vinci Institute, 2003; Skyrme, 2001	Value-add per employee [calculated as: turnover “bought in” (such as raw materials, outsourcing) divided by the total number of employees]
Productivity trend	Brynjolfsson, <i>et al.</i> , 2002; da Vinci Institute, 2003; Skyrme, 2001	The growth in value-add per employee
Market	Chatterjee & Segars, 2002; Hax & Wilde, 2001b; Noble, <i>et al.</i> , 2002	Market share growth over the past 3 years
Customers	Chatterjee & Segars, 2002; Hax & Wilde, 2001b	Growth over the past 3 years in the number of customers who made one or more purchases
Customer trend	Chaffey, 2002; Chatterjee & Segars, 2002	The conversion to purchase ratio defined as the number of electronic purchases divided by unique site visits
E-commerce metrics	Chatterjee & Segars, 2002; Hax & Wilde, 2001b; Noble, <i>et al.</i> , 2002	The growth in average transaction value

6.12 IN SUMMARY

As shown before there are many research studies that indicate a positive correlation between strategy and business performance in the domain of traditional firms. This study endeavours to prove this relationship in the special case of web-enabled commercial ventures. The inde-

pendent variable, strategic architecture, has been explored in the first chapters of this dissertation. The development of a construct for the dependent variable, business performance, is the subject of this chapter.

Metrics permit measurement and accountability that characterise successful ventures. They provide ways for management to assess the progress and performance of a business. They assist in defining the business model, communicating strategy, tracking performance, increasing accountability and aligning objectives.

The construct of performance is framed in the broader context of organisational effectiveness. Broadening the scope of the construct allows the inclusion of dimensions of operational performance such as the contribution of intangible assets. Valid measures then include indicators such as market-share, rate of new product introduction, product quality and economic value-added that address, for example, the infrastructural and marketing efficiency of the business. Similarly, other metrics, such as determinants of profitability may be included as useful indicators of performance within this perspective.

Research data sources are primary, when data is collected directly from organisations, or secondary, when sourced from the public domain. The approach to performance measurement used in this study focuses on both financial and operational indicators, with the data obtained from primary sources.

The development of the construct dimensions began by considering performance studies in the strategic management and entrepreneurship literature. In this way, the importance of dimensions such as profitability, market position, change in profitability and cash-flow, and growth in sales and market share began to emerge. In an analysis of common practice, a classification of performance metrics in terms of three classes was found. These classes assess electronic marketplace performance, address the digital readiness of the business model, and capture the ability of the firm collaborative performance. Further analysis revealed measures of strategic performance in the networked economy, and identified measures for business processes and strategic positioning.

Certain website performance measures were considered for inclusion, and an examination of the scorecard metrics completed the section. These metrics are integrated measures of per-

formance that translate strategies into objectives and monitor implementation. The balanced scorecard was developed partly as a response to the prevailing over-reliance on financial metrics, and the tendency for such measures to be retrospective rather than looking at future potential. Its approach incorporates innovation, customer satisfaction and employee development, and contains both financial data and the operational measures of customer satisfaction, efficiency, innovation and staff development. The balanced scorecard has some shortcomings when applied to network economy firms. These include inadequate attention to business models and vagueness regarding the location of capabilities and resources and the contribution from alliances. Correcting for these shortcomings, the performance dashboard incorporates desired outcomes and corresponding metrics, which are then mapped with leading and lagging indicators of performance, leading to calculated targets.

A study of traditional financial metrics began by considering the issues around valuing the contribution from intangible assets such as intellectual capital, processes, information systems and databases. Financial measures of cost/benefit analysis, net present value, internal rate of return, return on investment and discounted payback period were evaluated and their shortcomings discussed. Financial methods generally apply to the financial resources of the firm. Their difficulty in allowing for intangibles was discussed. Such measures tend to be historical in perspective and they encourage short-term thinking and behaviour. In practice, it was found that neither earnings nor returns correlate well with actual market value. Differences in the legal systems and tax structures of countries also make international comparisons unreliable.

Emerging measures of performance for electronic businesses included real options analysis. Proprietary metrics offered by consulting groups such as economic value added and the total economic impact methodology, as well as the value creation index were discussed. The control variables were motivated for inclusion in the instrument and the section concluded with the operationalisation of the performance construct. The next chapter discusses the development of the instrument leading up to the empirical phase of the study.

CHAPTER 7**STATISTICAL RESEARCH METHODOLOGY**

7.1 INTRODUCTION

The dissertation thus far has made a case for considering strategic architecture as a basis of success for a networked economy venture. The preceding chapters discussed the role of competitive strategy in performance. Next, the business model as a concept introduced the notions of value creation and customer-centricity in the networked economy. It was further argued that knowledge management, business flexibility and harmony could provide further sources of construct dimensions. Two constructs were eventually developed: strategic architecture for commercial web-enabled enterprises, and the performance of commercial web-enabled enterprises. Their relationship provides the rationale for the study.

This chapter introduces the empirical aspect of the work. It covers the background and development of the instrument and its administration. It begins by discussing the need for a systems approach to the survey process which, in turn, enables factors affecting the quality of instrumentation, such as validity, reliability, sensitivity and selectivity, to be considered. The impact of each factor and its accommodation underscores the need for effective scales.

Measuring requires scales. The concepts and value of nominal, ordinal, interval and ratio scales are discussed. Any scale should increase reliability, enable precision and simplify analysis. It is a composite way in which a construct is measured and produces a score from a respondent's output reflecting the answer to an item. In this study the scores for each question are summed to get an overall rating for a dimension. These are again summed for a composite score for each construct. The validity of this action is considered in terms of the literature. The instrument scale uses a range of inputs to determine ordinal value, and the appropriate Likert scale used is motivated. The pre-testing of the instrument and how the items were derived and instrument content validity enhanced, are discussed.

The instrument is administered as an online, web-based questionnaire. The online implications are discussed in terms of other evidence-collection processes such as personal interviews

and postal returns. Aspects considered include cost-effectiveness, anticipated response rates, interviewer bias, coding and error introduction. Instrument administration begins by explaining the outcome of the content validation process, and continues by discussing the characteristics of the population and the sampling frame. Aspects of sample type and size conclude with the analysis of possible sources of errors and how they are accommodated in this study. Non-response error as a special case is discussed in detail.

The population is defined and rules for inclusion are formulated, together with a discussion of the sources of data. Data collection and the collection process used in this study and respondent incentivisation actions bring the chapter to a close.

7.2 THE MEASURING SYSTEM

A survey, such as the one in this study, can be considered as a communication system that involves the researcher and respondent (Ferber, 1974:2.87). The interviewer – or the respondent-facing process as is the case in this study – in conjunction with the questionnaire, form a measuring instrument. A systems approach permits this act of communication to be viewed as being dependent on the occurrence of a chain of events, the quality of which is determined by the weakest link. Such an approach also enables the various factors affecting instrumentation to be taken into consideration in a survey. These factors include validity, reliability, sensitivity, selectivity, contamination, feedback, and noise (Ferber, 1974:2.87-2.88). Each of these is discussed below in terms of its application and function in this study.

There is a difference between validity and reliability. Validity refers to whether an instrument measures what it is designed to measure – in this case the constructs. In most situations validity measures must be restricted to face validity. Face validity refers to whether the answers seem to give what the questions purport to measure. The other factor is reliability. The instrument is said to be reliable if repeated measurements, made on the same object, are stable. In this study reliability is tested by the application of Cronbach's alpha. Reliability focuses on accuracy, consistency and validity asks the question "what does the instrument measure" (Bless & Higson-Smith, 1999:135; Sjostrom, Holst & Lind, 1999).

Sensitivity affects instrumentation. A measuring instrument is sensitive if it can discriminate between similar, but different, entities. There are limits on the power of discrimination. At-

tempting to make too fine distinctions may cause an instrument to become unreliable. The number of questions per dimension and the number of dimensions, confirmed in this study by expert opinion (Appendix L), are aimed at balancing sensitivity with reliability. Conversely, reliability can be increased by reducing sensitivity. This is the result of reducing the number of questions impacting on Cronbach's alpha. Sensitivity, reliability, and validity are interrelated concepts in considering the efficacy of a measuring instrument, however they are symptomatic rather than diagnostic. The application of Cronbach's alpha is covered in more detail later when measuring the scales and reliability of the instrument in this study are discussed.

The concepts of selectivity, contamination, feedback and noise affect diagnosis. To a large extent, using an automated, web-based questionnaire ameliorates many of the concomitant concerns. A measuring system is selective in several ways (Ferber, 1974). First, the researcher plays a role in respondent selection since selection of the wrong respondents, either by mistake or because of greater ease of contact, can introduce error into the measurement. In this study the census approach to sampling the entire population minimises error from this source. The possibility of the interviewer, in a personal interview situation, acting as a selective filter in hearing and recording respondent's answers is further minimised by the uniform approach created with an online questionnaire. Filtering of responses is another concern. It can be particularly dangerous when it occurs together with contamination. The interviewer, again in a personal interview situation, as the measuring instrument can contaminate the measurement by introducing his/her own ideas into the communication system. This concern is minimised by automating the process. In personal interviewing, feedback is a sanctioning statement or sign that indicates to the respondent whether he has met the requirements of each question. Such sanctioning statements, especially when combined with the selective-filter concept, can be the source of substantial bias. The web-based questionnaire eliminates this problem through the programming that ensures consistent and unbiased feedback (Ferber, 1974).

The results obtained through personal interviews may to some extent be invalid, unreliable, and insensitive. The prime reason is that the interviewer, as the measuring instrument in the communication system afforded by personal interviews, may be selective, may contaminate the message, may generate feedback for the respondent, and may measure noise. In this study, such potential weaknesses have been addressed and to a large extent negated by doing the survey online and automating as many of the measurement processes as possible.

7.3 MEASUREMENT CONSIDERATIONS

Nunnally (1978) describes the process of measurement as one of assigning numbers to objects that represent attributes. He states that since attributes rather than objects themselves are measured, care should be exercised with structure and interpretation (Churchill, 1979). “The rigour with which the rules are specified and the skill with which they are applied, determine whether the construct has been captured by the measure” (Loubser, 1999:92).

Questionnaire responses can be quantified by assigning numbers to the responses according to a given set of rules. This measurement can be made at four levels: nominal, ordinal, interval and ratio. Variables that are measured at the nominal or ordinal level are also referred to as qualitative variables (Remenyi, Williams, Money & Swartz, 1998:152-154).

Nominal scales are the least sophisticated level of measurement and place individuals or objects into categories with respect to some characteristic. The numbers allocated to such objects are no more than labels, and no ordering is implied. Quantitative analysis performed on such evidence only indicates the frequency of occurrence of responses in each of the categories. This form of scale is applied to the demographic variables in the questionnaire.

Ordinal scales are used when the respondent is asked for responses in the form of a rank ordering. While the evidence is again put into categories, the numbers assigned indicate the ordering of the categories. However, while there is order in the numbers assigned, the intervals between the numbers have no meaning.

Interval scales possess the property that the difference between the numbers on the scale can be interpreted meaningfully. Evidence based on interval scales can be analysed by virtually the full range of statistical procedures such as the mean, standard deviation and Pearson’s correlation coefficient.

Ratio scales provide the highest level of measurement. For these scales the numbers on the scale possess all the properties of the nominal, ordinal and interval scales and in addition ratios of numbers on the scale have meaning. Ratio evidence is the highest level of evidence and can be analysed by the full range of statistical techniques. In general when collecting evidence

the researcher strives to measure at the highest level possible. In practice, however, surveys generally make most use of evidence at the nominal, ordinal and interval levels.

7.4 SCALES AND MEASURES OF RELIABILITY

De Vaus (1996:249) defines a scale as a composite measure of a concept, a measure composed of information derived from several questions or indicators. A scale addresses the complexity of a construct and assists in developing more valid measures. A scale should increase reliability, enable precision and simplify analysis. Since a scale consists of answers to a number of questions, to each question a score is allocated depending on the answer. The score is allocated to particular answers depending on how favourable the answer is to the attitude being measured. The scores for each question, equally weighted since there is no readily obvious precedent in the literature for introducing weightings, are then added together to provide an overall score for that set of questions for each respondent (de Vaus, 1996:250). This rationale also applies to the composite scores for both constructs. The scale score is taken to indicate a respondent's position on the abstract dimension which the individual questions are intended to tap. This is precisely the process followed in this study.

The set of questions which measure the relevant concept usually consist of a mixture of favourable and unfavourable statements to which people are asked to express their extent of agreement and disagreement. The statements are selected to reflect orientation to the attitude of interest. One aim of an effective scale is to distinguish between people who fall at different points along an attitude continuum. There is little point in developing extreme items with which everyone will agree or disagree. The careful formulation of each of the questions in this study ensured variability in all answers. De Vaus (1996:81) suggests ways to further improve the quality of the questionnaire. When measuring the dependent variable/s, what is being explained should be clarified and questions then developed to measure this. When measuring the independent variables the instrument must ensure that the questions tap each of the causal variables.

A scale needs to be reliable. A reliable scale is one on which respondents would obtain the same scale score on two different occasions. An unreliable scale is the result of unreliable items. One approach to assessing reliability is to evaluate the consistency of a respondent's response on an item compared to each other scale item (item-item correlations). This pro-

vides a measure of the overall reliability of the scale. The index of this is given by a statistic called Cronbach's alpha and ranges between 0 and 1. The higher the figure the more reliable the scale. As a general rule of thumb, an alpha greater than 0.7 implies that acceptable reliability is being approached (de Vaus, 1996:257). The size of alpha is affected by the reliability of individual items. To increase the scale's reliability "rogue" items should be considered for exclusion. Further quality is supported by using multiple items.

When measuring any hypothetical construct it is advisable not to use a single item. Single-item measures are less reliable than multi-item scales and are also less valid (Partington, 2003:103). Certain concepts may have sub-dimensions. A summated scale comprised of several items each tapping a slightly different aspect of the construct dimension will provide a more reliable and more valid measure. High correlations are indicative of a reliable scale. Split-half reliability, used in the next chapter, involves splitting the items in a scale purporting to measure a single dimension into two halves and correlating the results from each half with each other. If the correlation is high, then both parts of the scale are measuring the same construct. Split-half reliability is a variation on the theme of internal consistency. The internal consistency of the scale, that is, the extent to which all the items are measuring the same construct, can also be established by calculating Cronbach's alpha (Partington, 2003:103).

Precise measurement of the constructs poses a challenge, since in the social sciences, unreliable measurements of people's beliefs or intentions can hamper efforts to predict their behaviour (Statsoft, 2004). Reliability and item analysis techniques are used to evaluate measurement scales. These techniques aid in the design and evaluation of scales that are made up of multiple individual measurements such as in this study. A basic principle of test design is that the more items there are in a scale designed to measure a particular concept, the more reliable the measurement. The variance for each item, and the variance for the sum scale is computed. The formula for Cronbach's coefficient alpha is the statistic used to estimate reliability when purifying the measure. The formula is as follows:

$$\alpha = \left(\frac{k}{(k-1)} \right) \times \left[\frac{1 - \sum (S_i^2)}{S_{sum}^2} \right] \quad \dots (7.1)$$

Cronbach's coefficient alpha results directly from the assumptions of the domain sampling model. In the above formula, S_i^2 denotes the variances for k individual items, and S_{sum}^2 the variance for the sum of all items. If there is no true score but only error in the items where, for example, they may be uncorrelated across subjects, the variance of the sum will be the same as the sum of variances of the individual items and $\alpha = 0$. If all items are perfectly reliable and measure the same thing, coefficient $\alpha = 1$, which means that the k -item test correlates well with true scores (Statsoft, 2004).

7.5 LIKERT SCALE

A rating instrument should have an optimum number of response categories – or at least a number beyond which there is no further improvement in discrimination between the rated items (Jacoby & Matell, 1971:495). Determining the optimum response categories is especially important in constructing a Likert-type scale. Such scales are often used in collecting attitudinal data in behavioural sciences research. Too few response categories may result in too coarse a scale and loss of sensitivity. Conversely, too fine a scale may go beyond practical discrimination. The optimal number of steps is a matter for empirical determination. The literature indicates is a wide variation in refinement around the optimal point in which reliability changes very little. There is evidence to indicate that 6- to 7-point scales are optimal, especially if several different instruments are employed concurrently (Jacoby & Matell, 1971:496). Psychometric literature emphasises reliability as the major, and in some instances, only, criterion in the choice of the number of scale points. The instrument in this study will be administered in the form of a six-point Likert scale, with additional provision made for a respondent to select a “statement not relevant” option. The neutral point of the Likert scale has been shown to not significantly affect an individual's composite score (Guy & Norvell, 1977).

7.6 PRE-TESTING A QUESTIONNAIRE

The measurement process begins by specifying the domain of the construct and delineating its scope. Several sub-constructs, or dimensions as they are termed in this study, have been developed from the literature. Items or measures for the dimensions are tabulated. Each item is in effect a statement which describes an aspect of a dimension. These are then incorporated into a preliminary questionnaire. The pool of items for explaining the dimensions of the con-

struct, are purified for content validity by local and international expert and academic opinion. The list of experts consulted is attached as Appendix L.

A questionnaire needs to be pre-tested before being administered. The objective of such pre-testing is to detect possible shortcomings in the design and administration of the questionnaire (Emory & Cooper, 1991). Approaches to pre-testing include consultation with colleagues, experts and people of diverse opinions. It may involve a pilot study which is a replication, on a small scale, of the main study (Remenyi, *et al.*, 1998:150). Such testing enables an assessment to be done of the clarity of the instructions and questions, the covering letter, the comprehensiveness of the codes/categories chosen for the pre-coded questions, the quality of the evidence and the ability to perform meaningful analysis of the evidence obtained.

Pre-testing also enables an assessment to be done of whether questions on key issues have been overlooked. Such concerns may include the time taken to complete the questionnaire, the likely response rate, the cost of administering the questionnaire, and which questions are relevant and which are not. This level of review is not prescribed in the literature. Remenyi, *et al.*, (1998), find no hard and fast rules concerning the design of a pre-testing exercise. They suggest sufficient pre-testing be done to provide the assurance that no serious problems are likely to be encountered in the main study.

The instrument will be first administered to a random sample as a pilot study. Following further purification, as required, the questionnaire will then be administered to the rest of the population. Once a set of data has been collected the reliability of the instrument will be assessed.

7.7 THE WEB-BASED INSTRUMENT

Two categories of evidence-collection processes dominate the literature. These are self-completion, and interviews (Remenyi, *et al.*, 1998:156-158). Self-completion methods include mailed and computerised questionnaires. Interview methods include personal and telephonic interviews. Mailed questionnaires incur the lowest costs and can have wide coverage. They allow a respondent time to complete the questionnaire in their own time, thereby ensuring that the responses are free from possible interviewer influence. Usually accompanied by a covering letter informing the recipient of the nature of the study, its importance, what it will be

used for, the time taken to complete the questionnaire, the date by which the questionnaire should be returned and the benefits to be gained from participating. All these factors will be included in the covering letter to potential respondents. Mailed questionnaires guarantee respondent anonymity. This method requires the questionnaire be highly structured, with questions being predominantly closed-ended. The questionnaire should be simple to complete and not too lengthy, preferably not taking more than 20 minutes to complete. Such factors are determinants of response rate. Response rates achieved for this type of survey are, in general, lower than for other survey methods and rates as low as one per cent have been reported (Remenyi, *et al.*, 1998). In the worst case the questionnaire used in this study took between 15 and 18 minutes to complete when tested amongst lay-people, none of whom were knowledgeable of the industry.

Computer administered questionnaires are increasingly being administered electronically across networks through the use of e-mail or the internet (Vehovar, *et al.*, 2001). The merits of this approach include its relative low cost, the ease with which it can be administered, elimination of interviewer bias, and the opportunity to do instantaneous evidence collection and analysis. Disadvantages may include the complexities and cost of designing, programming, and hosting the questionnaire and back-end database.

Telephone and personal interview questionnaires can be used to obtain information quickly. Costs are more than for mailed questionnaires but less than for personal interview questionnaires. Administration is relatively easy when compared to the use of face-to-face interviews, and as a consequence interviewer bias is less of a problem. Personal interview questionnaires require a face-to-face conversation between interviewer and interviewee. This approach is expensive in terms of interviewing time and travelling costs, as well as in terms of the time it takes to complete the whole process. There is the time needed to gain access to the informants, the need for training of the interviewers, the co-ordination and supervision of the fieldwork, and the time per interview which, typically, can take between 45 and 90 minutes. Each of the above incurs monetary costs. Due to the resource and time constraints in this study this approach was considered inappropriate. Problems associated with this approach include interviewer bias and a lack of anonymity which could result in respondents not giving honest answers, or making socially desirable responses, thereby contributing to increased response bias. The advantage of this approach, however, is improved response rate.

Analysis precedes coding. Analysis requires that respondent's answers to questions be converted into numbers. Coding involves allocating codes to the answers to each question. Each answer to a particular question is given a distinctive code in this study. The number thereafter represents a particular response to a given question. In this study, a range of codes from 2 to 7 in increments of 1 are given to responses that range from "Totally disagree" to "Totally agree". The option of "Statement not relevant" has a score of 1. Since the instrument is web-based, programming inserts the correct code and ensures that only one response to each question is accepted by the system. In addition, since certain demographic fields are essential to prevent duplication, automation also ensures that a response is not submitted until all compulsory fields have been completed. To further encourage completion, all questions must have an answer before the respondent can "Submit" their response. To facilitate respondent behaviour, any non-responded questions are brought to the respondent's attention before submission. This process also ensures that there is no missing data – but does not stop the respondent from selecting the "Statement not relevant" option. The direct entry of data, by the respondent, into the web-based instrument thus facilitates analysis and eliminates coding errors.

7.8 INSTRUMENT ADMINISTRATION

7.8.1 Content validity of the instrument

Content validity, as in this study, was ensured by basing construct design on the literature and other related work (Bless & Higson-Smith, 1999:137; Venkatraman & Grant, 1986:79). Expert review of the design, item pool and questionnaire served to underwrite content validity. The instrument, once developed, was submitted to local and international knowledgeable persons (refer to Appendix L). The feedback received from these persons was incorporated into the instrument. Forty three contextual, grammatical or typographical changes were made. One question was discarded. The instrument was then considered ready for use. The first task in the administration of the instrument was to identify members of the population universe.

7.8.2 Population characteristics and sampling frame

Commercial ventures using the web are the subject matter of this dissertation. These ventures are often depicted with an "e" prefix, as in "e-commerce". Once the internet becomes fully ubiquitous, and being networked loses its competitive advantage, it is probable that this prefix

could fall away. Its primary purpose, in the context of this study, is to facilitate examination of the characteristics of the early adopters by differentiating them from other firms in the networked economy. The study of early adopter businesses requires a label which differentiates them from those not yet deriving networked economy benefits. The e-commerce firms are the internet business pioneers, who desire to be the first to pick the Schumpeterian plums cultured in the networked economy. These firms are the forerunners of organisations learning to manage in this new environment. Studying them should provide insights into appropriate management behaviour for the future.

The e-commerce population in South Africa is relatively small. It should be theoretically possible, therefore, to collect information from everyone in the group. Their individual responses and characteristics should then reflect those of the group. A census is undertaken when information about each member of the population is collected. In a probability sample each person in the population has an equal, or at least a known, probability of being selected. In a non-probability sample some people have a greater, but unknown, chance of selection. Sampling the entire population provides an equal probability of selection. The sampling frame in this study therefore comprises of all members of the population (Appendix M).

7.8.3 Sample type and sample size

It is unlikely that the responses received will be perfectly representative, since by chance alone there may be differences between the respondents and the population, due in part to sampling error. Sampling error is the extent to which the sample differs from the population (de Vaus, 1996:393). It is necessary that the characteristics of the respondent group be close to those of the population.

Required sample size depends on two key factors: the degree of accuracy required, and the extent to which there is variation in the population in regard to the key characteristics of the study. The other consideration is how much error is tolerable (de Vaus, 1996:70). At the 95% confidence level, with an acceptable sampling error of 10%, a sample size of 100 is acceptable (de Vaus, 1996:71-72). The absolute size of the sample is important except when the sample size represents a sizable proportion of the population (e.g. 10 per cent). In such cases a slightly smaller sample is equally accurate. The figures quoted above, assume

that the population is heterogeneous. Extrapolating the values cited above indicates that when the sample size approaches 39, the sampling error tends towards 16% (de Vaus, 1996:71).

Remenyi, *et al.*, (1998:195) view determination of sample size as a more complex problem. They suggest that factors taken into consideration include the type of sample, variability in the population, time, costs, accuracy of estimates required, and confidence with which generalisations to the population are made. They report that in practice sample sizes resulting from the application of statistical formulae are not necessarily adhered to. Samples chosen in practice are of a size regarded as credible through having been used by others conducting similar studies in the past. These authors find such an approach to be acceptable. Sample size is central to identifying and controlling for error.

7.9 SOURCES OF ERROR

7.9.1 Background

Observations and their interpretation are seldom free of error. Recognition of this vulnerability, however, does not imply passive acceptance. In this study every effort was made to identify, reduce or compensate for possible errors. This section discusses the possible sources and types of errors and how they are accommodated. Bless (1999:144-146) suggests that once the data has been analysed and the findings stated on the basis of quantitative and qualitative analyses, these findings, as well as the whole procedure leading to them, must be thoroughly and critically reviewed to detect any errors of measurement, bias and mistakes which could have distorted the description of the aspect of social reality under study.

7.9.2 Non-response error

In the literature, a much-discussed source of error is the non-response error (Heberlein & Baumgartner, 1978; Sjostrom, *et al.*, 1999:243). A response rate of 100% is practically impossible to achieve. Dillan, Sinclair and Clark (1993) showed that the non-response rate in large studies has increased by ten percent within the last decade. Groves (1989:155) classifies non-respondents as either “refusers” or other non-respondents and also points out that the refusers in particular have increased. Factors affecting the response rate and ways of raising it have been studied widely (Dillan, *et al.*, 1993). In general, a concern is that non-response may

create a bias. However, Lindstrom (1983) suggests that the reduction in the response rate that has occurred over the years has probably only had a limited impact on the bias.

Non-response bias has two sources of error: non-response and incorrect answers. In a study in Sweden, incorrect answers accounted for approximately one-third of the total bias and non-response the remainder (Sjostrom, *et al.*, 1999). Incorrect answers also are a source of bias. Questions may be answered incorrectly for many reasons: the respondent has misunderstood the question, forgotten the answer, “knew” the wrong answer, or gave, whether intentionally or not, a false answer.

The question raised by non-response is: “Do those that respond differ in their answers from those that do not?” If they do, and there is a difference, then the results obtained from those responding do not tell how the entire sample would have responded and do not enable generalisations relative to the target population (Dodge, Fullerton & Rink, 1982:127). Non-response error or bias results from differences in answers between respondents and non-respondents. A major criticism of mail as opposed to in-person or telephone methods has always been a lower response rate and consequently a larger proportion of non-response.

For a variety of reasons people selected in a sample may not finally be included. Some will refuse, others will not be contactable. Non-response creates two main problems: unacceptable reduction of sample size and bias. Sample size problems can be overcome by selecting, where possible, a sample larger than that needed. This is one reason for the census approach in this study. This, however, does not always avoid the problem of bias. Non-responders may be different in some crucial respect to responders; increasing the sample size does nothing to produce the correct proportions of various groups if some types systematically do not respond. The difficulty is not so much the bias itself, since there are statistical techniques for minimising its influence in the analysis, but in working out what the bias is and to what extent it occurs. Once this is known, suitable allowances are possible (de Vaus, 1996:73).

There are different ways of obtaining information to enable adjustments for bias. The first is to use what observable information can be picked up about non-responders. Where contact is made but people refuse to participate some information may be able to be gleaned. Some sampling frames may also provide clues. When characteristics of the population are known it may be possible to compare the characteristics obtained in the sample with those of the popu-

lation. Differences may indicate the areas of bias and the extent of the differences indicates the degree of bias. Given this information adjustments may be possible during analysis to neutralise the effect of non-response bias.

In this study, every effort is made, using the suggestions from the literature, to minimise non-response. An integral part of the study is the identification of sources of secondary data. It is unlikely that reliable sources will be located. The population has in common only the fact that they are web-based, commercial enterprises. There is no other commonality. There is no industry association, government agency, common standard industrial classification (SIC) code. The population members range in size from small, medium and micro enterprises (SMMEs) with less than five employees to major corporations; from booksellers to banks; from venue providers to auctioneers. Exacerbating the problem is the fact that, other than academic study, there is no reason for gathering or reporting such data. This shortcoming is not a global one. In Canada, for example, a useful source of such statistics are mandatory government returns for electronic commerce companies (Industry Canada, 2001; Statistics Canada, 2001). In a personal communication with the custodian of the .za country code domain name (Lawrie, 2004), he advised that not even the various South African domain name registering authorities have this information. In his expert opinion, due mainly to the diverse nature of the population members, and no perceived great need for such statistics, there is no reliable, current source of secondary information on electronic commerce businesses in South Africa.

In the event of high non-response a second approach will be to contact each of the non-respondents and request them to supply only demographic information. It may be possible to determine demographic profiles and link them to the respondents, as suggested by de Vaus (1996:73). Prevention of non-response, in the first place, will be better than cure. Controlling for non-response bias in this study, and the findings of the demographic analyses are discussed further in Section 8.3.

7.9.3 Other errors and their accommodation

Measurement errors refer to quantitative data which is wrong or inaccurate and classification errors are made when qualitative data is wrongly identified or inappropriately allocated. Both types of error have been addressed in this study by careful and precise handling of the data

when it is entered. Coding is a single automated process through the use of the web-based front-end. The data is extracted from a SQL database and transferred directly into the Statistica processing software. The programming was repeatedly tested with test data. By the time the instrument was applied in the study there were no functional problems. Constant errors are systematic, repeated errors occurring throughout the research; and they can introduce important biases. Again, by automating the instrument such errors are reduced or eliminated.

There is a difference between errors and mistakes. Errors, such as those mentioned above, introduce bias and inaccuracies in measurement, but their sources can be detected, their seriousness evaluated and there exist some statistical techniques for controlling or eliminating their effects. Interviewer or researcher mistakes are neither predictable nor detectable in time to permit their systematic analysis and correction. Errors can be introduced at all levels of the research process. These include vagueness of the definitions and inaccuracy of the hypotheses. The lack of adequate operational definitions can lead to an inaccurate description of the population, of the types of information to be collected, and so forth. By bounding the population with clear definition (commercial web-enabled businesses) and membership rules, vagueness is minimised.

Errors of omission in the design and the planning of the research are overcome by basing the research on the literature and consulting expert opinion at several stages of the study. By applying a census approach, the sampling errors that could affect the representativeness of the sample are minimised.

Errors in the imperfection in the research instrument were minimised by expert review. Analyst bias errors are usually introduced at the level of processing and coding. Misinterpretations of the answers, in particular of open-ended questions, are frequent, leading to incorrect classification. The possibility of statistical treatment errors was minimised by making use of an expert in the statistical processing. The questionnaire contains no open-ended questions.

Regardless of efforts to minimise the potential impact, researcher bias remains a source of error. A researcher can never be completely neutral, particularly when dealing with the social sciences. A researcher has an expectation not only on the basis of scientific considerations but also on the basis of his or her personal views. These tend to surface in her or his interest in, and choice of, the research topic, as well as in many other steps of the research. A researcher

may intentionally or otherwise, choose a particular population, adopt a certain sample, ask (or refrain from asking) some specific questions, deliberately omit to take into consideration some theories or research findings contradicting or putting into question the validity of their approach. At all times in this study, objectivity has been striven for. The study proposal was presented to a panel of academics, experts and practitioners. Further input from knowledgeable people in the fields of information systems, research design, business strategy, statistics and business have proven invaluable in this task. During the study, papers were presented and discussed at two related, specialist conferences (Mansfield, 2002; Mansfield & Fourie, 2003). A further paper on the relationship between business models and business strategy has been published in a refereed academic journal (Mansfield & Fourie, 2004). The final test, however, of the study's validity will come from its exposure to academic debate and business practice.

As defined earlier electronic commerce is the conducting of business communications and financial transactions using networked computers. In the case of this study, it is the buying and selling of goods and services through the world wide web. This definition was used to select the population and in the process develop certain population rules.

7.10 POPULATION MEMBERSHIP RULES

7.10.1 Introduction

Mouton (1996:135) suggests the development of rules for defining membership of the population sample frame. The scope of this study embraces the set of South African businesses that use the web and its technologies specifically to conduct commerce transactions with consumers. This is the sampling frame and there are rules for inclusion.

7.10.2 Membership rules

The general rules for the purposes of this study are as follows:

1. The e-commerce business must have a web presence, defined by the existence of a website with a domain name ending with either “.co.za” (denoting a commercial enterprise, domiciled in South Africa), or “.com” (commercial enterprise, with international exposure).

2. The website must be active and not be “under construction” or in an obvious “test phase”.
3. There must be evidence of online trading such as the presence of an online payment facility. The site must not simply be an electronic brochure soliciting responses in the form of emailed orders or enquiries.
4. Both sides of the transaction, representing the commercial bid and buyer offer, must be evident. This means that a business with a site simply offering product selection (electronic catalogue), soliciting an emailed order, is not included in the population. This restriction effectively excludes businesses such as some hotel reservation firms, car-hire firms, venue booking agencies and travel agents.
5. The site should include the provision of an online shopping cart or similar facility into which selected products are “inserted” and, once filled, presented for payment.
6. The site should provide a secure payment process protocol for protection of the customer.
7. In terms of the spirit of the Electronic Communications and Transactions Act (the ECT Act – which is more fully discussed in the next Section), customer protection is the responsibility of the seller. Sites hosted by reputable companies such as MWeb or Tiscali, and verified by a digital certificate from a provider such as Thawte or Verisign, would show compliance with this aspect of the Act.
8. The e-commerce company may outsource some or part of its online offering. The sales and fulfilment contractual obligation, however, must clearly reside with the vendor, not the outsource partner. The site branding should make this responsibility quite evident.
9. For ethical reasons, sites with certain themes have been deliberately excluded from this study. These typically, would be “adult”, “gaming”, pornographic or “spiritist” sites.

10. Portals, such as SA Homeloans (2004), which offer click-through access to other parties who actually offer the service, are excluded from the population since they do not comply with the definition of an e-commerce transaction.

The study, as motivated earlier, is restricted to those commercial enterprises whose main source of revenue is in South Africa, and under whose jurisdiction and legal framework business is conducted.

7.10.3 The Electronic Communications and Transactions Act

Subject companies should endeavour to comply with the relevant South African legislation. The ECT Act, number 25 of 2002 (“the ECT Act”), became operative on 30 August 2002 (Republic of South Africa, 2002). It has widespread implications for organisations across the entire commercial spectrum. It has specific application to any entity that communicates and transacts electronically, such as web-enabled e-commerce companies. The overall objective of the ECT Act is to enable and facilitate electronic transactions by *inter alia* creating legal certainty around electronic communications and transactions, developing a safe, secure and effective environment for the consumer and businesses, to afford better protection to the consumer by promoting confidence and trust in electronic activities, and generally promoting online transactions in South Africa (Bortz, 2002:1).

Amongst other matters addressed, the ECT Act also clarifies the definition of an electronic transaction. It deems such a transaction to have been concluded at the time and place where the acceptance of the offer is received by the offeror. The ECT Act provides various forms of legal protection for the consumer. It imposes obligations on suppliers who transact electronically. These obligations include, when offering goods or services for sale, that the offeror makes certain information available to consumers, in writing on the website where such goods or services are offered. Such information includes full details of the supplier, a sufficient description of the goods or services so that a potential purchaser can make an informed decision about a planned purchase, and the price of the offering. All online and/or website terms and conditions and email disclaimers should embody the provisions of the ECT Act.

At this early stage of the implementation of the ECT Act, companies should endeavour to comply with its requirements. Since businesses are still coming to grips with this new legislation at the time of the study, the spirit of the ECT Act, rather than its strict compliance, frames the decision for a respondent's inclusion in the population. The ECT Act is only one membership rule in this study. There are others, as discussed before (refer to Section 7.10.2).

7.10.4 Sampling frame sources

The population was chosen from sources available in the public domain. The sources used to compile a list of companies to obtain primary data, are as follows:

- SA Post Office “Blue Pages” web directory – online edition (South African Post Office, 2003);
- Goldstuck report 2002 (Goldstuck, 2002);
- MWeb online shopping client list (M-Web, 2003);
- Tiscali World Online client list (Tiscali, 2003);
- Ananzi index (Ananzi, 2003);
- Iafrika.com online shopping client list (iAfrica, 2003);
- Brabys Business Directory (Brabys, 2003);
- Financial publications and their available online archives such as Financial Mail, Finansies and Tegniek and Brainstorm;
- News websites such as ITWeb, Mail and Guardian and Business Day;
- The e-Business Handbook (Worthington-Smith, 2001);
- General press such as the Cape Times business report, Sunday Times; and
- References given by respondents in the course of soliciting their participation.

In order to cross-check the constituents of the e-commerce population, an examination of business websites often revealed the use of third-party service providers such as Setcom (2004), e-Bucks (2004), Safe-Shop (M-Web, 2004), Thirt (2003) and others. These service providers, however, proved reluctant to divulge their customer lists. Since the service provider name often appeared on the website of the e-commerce business, searches were constructed using the Google (2004) search engine and the service provider's trading name. In this way, a cross-check generated further lists of South African e-commerce companies. Once the e-commerce companies had been identified, Google was again used with the top-level domain name “.co.za”, together with keywords such as “shopping basket” and “online”. The

first 450 records from the search were scrutinised in terms of the membership rules given above for further qualifying companies. The product of these searches was cross-checked against the original list. In this way the primary list of e-commerce ventures was expanded. The relatively small number of e-commerce ventures lead to the decision to survey the entire population. The unabridged list of population members is given in Appendix M.

7.11 DATA COLLECTION

“Most surveys collect the desired data directly from the respondent by some form of questioning” (Ferber, 1974:2.76). There is a concern, however, that the act of questioning may have undesirable and unexpected effects. The answers, for example, may be subject to distortion; or errors caused by faulty memory; or a desire to enhance prestige, low motivation or lack of understanding. Despite all the possible errors and biases in direct questioning of respondents, this method of data collection is most frequent encountered in survey research.

There are many advantages to collecting data directly. Questioning can be standardised so that all respondents react to the same stimulus. There are means of obtaining representative samples of individuals to whom the questions can be addressed. There is evidence that people can, within limits, report fairly accurately and truthfully about their attitudes, opinions, level of knowledge, behaviour, expectations, and beliefs.

The most frequent forms of data collection are the mail questionnaire, the telephone interview, and the personal or face-to-face interview. The appropriateness of using a mail questionnaire depends on two considerations: the availability of a good list and the prospects of an adequate response. Reference has been made to the importance of achieving high response rates. Mail surveys may produce response rates of only 20 or 30 percent (Ferber, 1974:2.77). This author reports that mail surveys are effective with small, special-interest groups, such as employees of a particular company, or members of an organisation, when the survey deals with their particular concern. Mail surveys may be less effective if the group is large and amorphous and if the survey's subject is of little interest.

Response rates to mail surveys can be improved by an appropriate covering letter urging cooperation, providing assurances of anonymity and a statement of survey purpose. Ferber (1974:2.77) suggests sending follow-up mailings stressing the importance of cooperation and

providing some form of tangible inducement. Acting on his suggestion, respondents received a motivating letter from the university; they were fully informed of the value of the study to emerging businesses; and they were further incentivised by being offered access to the aggregated responses of their peers.

Over a period of two months, 508 phone calls were made to every potential participant. Care was taken to locate a person at the appropriate strategic level to complete the questionnaire. In order to prevent interviewer bias, a standardised phraseology was used (refer to Appendix B). In total 253 websites were identified. Some businesses had more than one website. Several businesses, notably the financial institutions, had discontinued e-commerce processes on their sites. Some sites were simply not contactable, and after repeated calls voice-mail messages had to be left. In a few instances only web-based text emails could be sent. In only one case a respondent declined to participate in the project. Filtering out these non-contenders resulted in the identification of 192 qualifying businesses. Of these businesses, 144 were contacted by phone by the researcher. Where voice contact could not be made with the remainder, as the last resort, a personally addressed, unsolicited email was sent out.

If no response had been received from someone who had agreed to participate, a reminder letter was emailed. After the survey had been available for two weeks, a notice of project termination was emailed to all non-respondents, who were then given another week to make their submissions. In this way, two further responses were received. The instrument administration process was curtailed once it became apparent that no further responses would be forthcoming. In order not to irritate people, and in so doing possibly compromise future studies, no further telephonic contact was made.

7.12 THE SAMPLING PROCESS IN THIS STUDY

Tull and Hawkins (1976:150) advocate a stepped approach to the sampling process. The table below summarises their advocated approach and the “Actual” column represents the approach followed in the study.

Table 7.1: Steps in the sampling process

	Step	Description	Actual
1	Define the population	The population is defined in terms of: element, units, extent, and time.	Commercial, web-enabled B2C enterprises; individual businesses located in South Africa; and trading online during the period 1 January 2004 to 31 March 2004.
2	Specify sampling frame	A specification of the means of representing the elements of the population.	The sampling frame consists of a 100% sample of all e-commerce firms sourced from all published and searchable sources.
3	Specify sampling unit	A specification of the unit for sampling, for example, city block, company, or household. The sampling unit may contain one or several population elements.	Individual, unique business enterprises.
4	Specify sampling method	Specification of the method by which the sampling units are to be selected.	The population will be sampled directly in a census approach.
5	Determine sample size	Decide how many elements of the population are to be sampled.	All the web-enabled firms.
6	Specify sampling plan	Specification of the operational procedures for selection of the sampling units.	See the membership rules.
7	Select the sample	Carrying out the office and fieldwork necessary for the selection of the sample.	The sample in the case of this study is the entire population.

Source: Tull and Hawkins, 1976:150

In terms of the pre-testing a pilot study was conducted. The instrument was administered to a randomly-selected sample of 10% (25 businesses) of the population. The pilot group received the standard telephonic request to participate in the study. Once their responses had been received, their feedback was solicited in the form of a standard email (refer to Appendix C). The pilot study results were evaluated for consistency by calculating the Cronbach's alpha for each dimension, which in every case exceeded 0.75. In addition to feedback on content, the pilot group were asked for their comments about the questionnaire (refer to Appendix D). The results of the feedback necessitated no further changes. The questionnaire was deemed

suitable for application. Appendix H shows images of the final document as placed on the web.

Respondent commitment and motivation was a prime concern. In order to incentivise respondents, each person, only once they had completed the survey, was offered a view of the aggregated data. In order not to introduce bias, the web-based questionnaire was designed in such a way that a respondent could only view the aggregated data once his or her response had been submitted. The process was individualised and password-controlled. A respondent could not change their submission or submit a second response. In addition, every question was compulsory and had to be answered before the system would accept a submission. The completion of certain demographic fields was also mandatory.

Initially, the aggregate viewing option was disabled since premature access could result in viewers arriving at misleading conclusions. Once sufficient data had been received (from about 50% of the respondents) a preliminary statistical analysis indicated that the responses were sufficiently reliable to indicate emerging trends. The early survey participants were notified by email that they could now view the combined response. Their attention was drawn to the fact that as the study progressed, the aggregated data would change. Respondents were encouraged to make use of the “refresh” facility of their browser to view the updated results. These facilities motivated respondent participation. Making the entire process web-enabled also reassured respondents that the exercise would not be excessively time-consuming.

Once the survey site was closed, the results were extracted from the web-based SQL database in the form of a comma separated value (CSV) file. The data were imported into STATISTICA software. The data were analysed using various statistical techniques. All the results are presented in the next chapter.

7.13 IN SUMMARY

This chapter discussed the preparation of the empirical phase of the study with a view to exploring the relationship between strategic architecture and performance. The preliminary questionnaire was purified by local and international expert and academic opinion.

This study motivated its choice of e-commerce companies, revisited definitions and developed rules of membership for the population, which included *inter alia* the business having an active web presence with evidence of online trading showing both the bid and offer sides of the transaction. The respondents' site should be secure for customer protection and comply with the spirit of South African law. Primary and secondary sampling frames were discussed, and the process began by finding suitable e-commerce companies. After purification, and a pilot study, the instrument was finalised and administered, to the population using the web. The next chapter covers the statistical analysis of the results and the findings of the study.

CHAPTER 8

PROCESSING, ANALYSIS AND INTERPRETATION OF DATA

8.1 INTRODUCTION

The previous chapter placed the survey instrument in its context and discussed its application to the population of South African commercial web-enabled businesses. This chapter presents the results of the empirical study. The first part of the chapter begins with an analysis of the demographic control variables. The statistical analysis that follows includes the basic statistics, measures of central tendency and reliability of the data, and finishes with a regression analysis.

8.2 DEMOGRAPHIC ANALYSIS (CONTROL VARIABLES)

As motivated before Cooper (1989) suggests establishing common ground for comparing performance between different businesses. The first control variable for this study determined whether the respondent's firm was a pure online business or a hybrid. The others evaluated the type of business model, the number of staff, the size of the business in terms of annual turnover and period of online trading. The results of each of these variables are now considered in turn.

8.2.1 Response rate

The measuring instrument was administered to the South African e-commerce population, following the process discussed above. In total, 69 responses were received which represents 35.9% of the South African e-commerce population. Table 8.1 summarises the distribution of the responses.

Table 8.1: Response distribution

	Number	Cumulative balance
South African e-commerce sites determined from the sampling frame		253
Less:		
Duplicates (business has more than one website)	12	241
No longer have an e-commerce process on the website	19	222
Inability to send formatted email (only contact is via a text-based, structured form) - no email sent	4	218
Decline to participate	1	217
Telephone contact not identifiable, no email address available - no email sent (such firms are non-ECT Act compliant, refer Section 7.10)	25	192
Available study population		192
Personal contact followed by a solicited email	144	
Telephone contact not possible and unsolicited email sent	48	
Responses received		
Responses received (number)		69
Responses received (as a percentage of the available study population of 192)		35.9%
Usable data (Respondents that completed both the strategic architecture and performance constructs. For discussion refer to Section 8.3)		39
Usable data as a percentage of the available study population of 192		20.3%

8.2.2 Respondent functional level

Careful investigation enabled respondents at executive management level to be identified and invited to participate. Almost 80% of the respondents reported that their functional position was at the management level or higher. About one third of the respondents were either owners, chief executive officers or managing directors. Table 8.2 shows a breakdown of the functional level and distribution of the respondents, for all responses (n=69), and usable data (n=39).

Table 8.2: Functional level of respondent

Functional level		Distribution	
		(n=69)	(n=39)
1	Owner / Managing Director / Chief Executive Officer	36%	34%
2	Member / Director	26%	23%
3	General Manager / Chief Information Officer	5%	10%
4	Manager (e-Commerce Manager, Information Technology Manager)	21%	23%
5	Functional specialist / Webmaster	12%	10%
	Total	100%	100%

8.2.3 Business history of the respondent companies

Almost 60% of respondents reported that their businesses were online ventures that had begun from offline businesses. In order to determine whether hybrid firms differed in their approach to strategic architecture from pure online businesses, a statistical test was performed. To test respondent consistency, this question was repeated, but in reverse. In all, 38% of respondents duly reported that they had always been pure online businesses.

The success of online trading can create a need for an offline channel for the same company. This is a trend evidenced in South Africa where mail order businesses, such as Glomail and Verimark, have developed offline channels, selling through stores of major retailers. This trend was also tested amongst the e-commerce companies. Some 16% of respondents reported having offline outlets spun-off from their online businesses. In the case of the type of business model employed, 93% of respondents reported having e-shops. A further 6% of the respondents reported having online auctions as their businesses.

8.2.4 Business size

A breakdown of respondent business size is shown in Figure 8.1. The larger firms, that have an annual turnover in excess of R20 million consist of the direct sale airlines, auctions and the larger home-shopping e-tailers. This group represents 18% of the respondents. About 26% of respondents have an annual turnover between R2 and R10 million. These are the larger online book stores, technology purveyors, gift sellers, online advertisers, financial services suppliers, wine and music vendors.

The largest group of respondents is that of smaller firms whose turnover is less than R2 million. They comprise 56% of the population. These are, typically, the specialist online retailers such as wine, art, music and some book sellers. This group also includes most of the start-up businesses. Figure 8.1 shows the distributions.

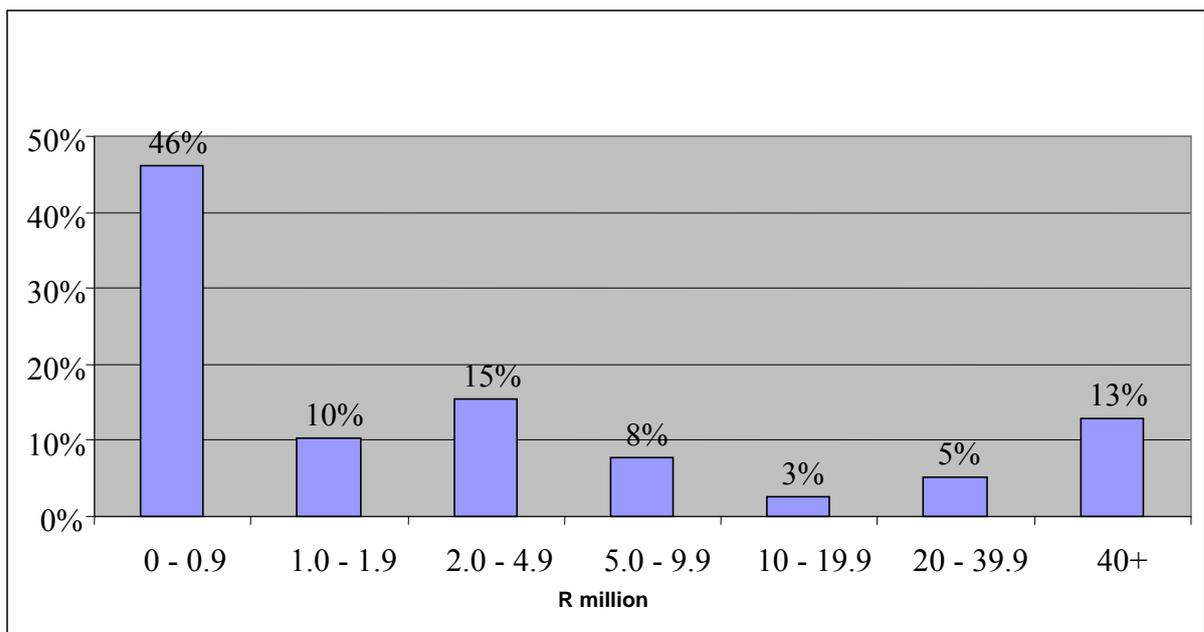


Figure 8.1: Respondent annual turnover (n=39)

Not surprisingly, the distribution of staff numbers approximately echoes the results as portrayed in the graph above. Figure 8.2 shows the distribution of staff numbers.

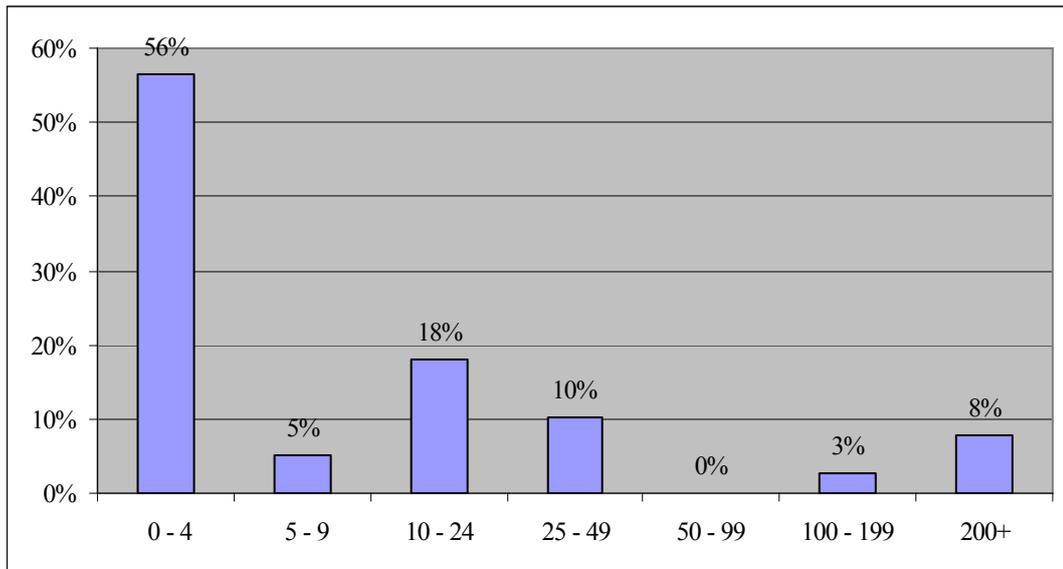


Figure 8.2: Number of full-time equivalent staff (n=39)

The trends in this graph roughly follow the turnover results.

8.2.5 Type of business

The classification of Rappa (2002), as discussed in more detail in Section 4.10.3, was used to classify the different types of business models amongst the respondents. The distribution of the results is shown in Figure 8.3.

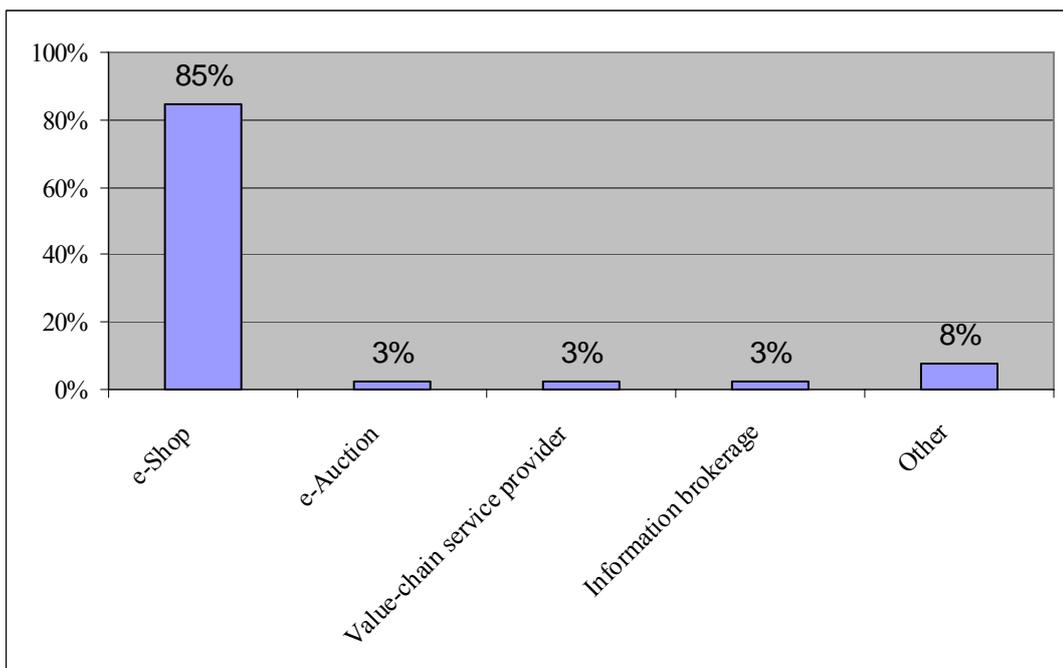


Figure 8.3: Type of business (n=39)

This analysis again reflects the newness of the South African e-commerce industry. The e-shop is the least integrated or innovative model of all. In essence, it is simply running a business in the same way online, as it is done offline.

8.2.6 Online lifespan

The crash of the dot.com era occurred in early 2000, about four years prior to the time of writing. The effects on the local industry are reflected in Figure 8.4.

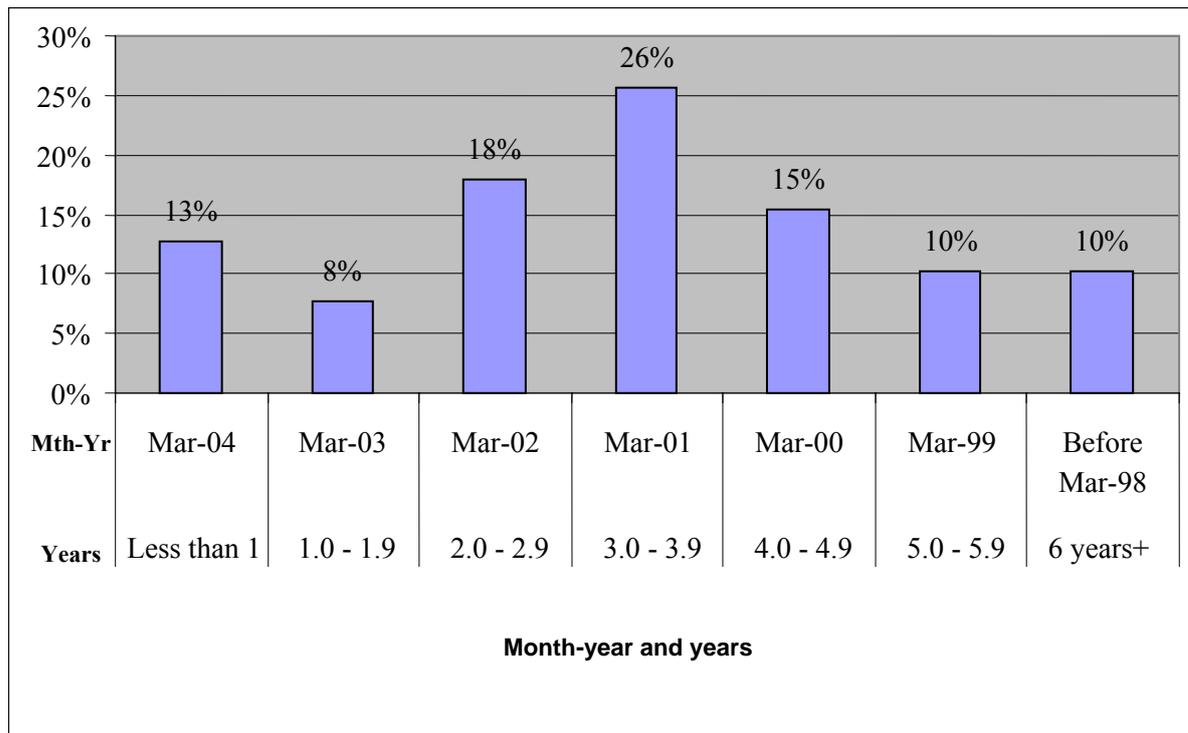


Figure 8.4: Year online trading began and online-trading period (n=39)

In all, 35% of the respondents were trading prior to March 2000. There was possibly more momentum and resilience in the South African industry. During the 12 months following the dot.com crash in the US which occurred at that time, locally, 26% of the respondents became established. There was a decline in online ventures as companies and investors lost faith during 2001 and 2002. In the year to March 2003, only 8% of ventures were initiated. The graph however shows a recovery in confidence for the year ending March 2004. Some 13% of respondents began trading during this period. Almost 40% of respondents have been trading for less than three years. This finding has implications for performance measurement and usable data.

8.3 USABLE DATA

The respondent data were examined for usable records. The limiting factor in completeness was the performance construct. Many respondents selected the “Statement not relevant” option in this section of the questionnaire. There are many possible reasons which could explain this phenomenon:

1. There may be a general reluctance amongst respondents to share what they perceive as confidential data. This perception occurred despite repeated verbal and written assurances guaranteeing the individual response confidentiality. It was repeatedly advised in emails and telephone calls that only aggregated data would ever be generally available.
2. Respondents had only recently started trading. In the analysis, 39% of the 39 respondents indicated that they had only been trading online for the past 36 months. Such a high proportion was not expected in the research design, which, in order to get a reasonable indication of performance history, requested 3-year time trends in some of the performance items in the questionnaire.
3. One may speculate that due to the relative newness of the South African market, some respondents may be pursuing first-mover advantage, where growth in customer numbers (or market share) has taken precedence over all other strategies. This may imply that some respondents either have no other metrics yet in place, or rely on simplistic indicators such as monthly turnover growth or growth in customer base rather than on financial or other measures of progress.

In order to find valid, usable cases for confident statistical analysis, a plot of the number of performance construct measures available *versus* the number of cases which could be used for analysis was done. The results are shown in Table 8.3.

Table 8.3: Performance construct: Trade-off between items and usable cases

Item	Number of valid cases	Item (continued)	Number of valid cases (continued)
3	51	5,9	40
4	50	10,11	40
11	49	3,4,5,9	39
9	47	3,9,11	39
3,9	44	4,5,9	39
4,11	43	1,3	39
3,4	42	1,4	39
3,5	42	2,9	39
5	42	1,2,3	38
10	42	2,3,5	38
3,4,5	41	2,3,9	38
3,11	41	1,2	38
4,5	41	2,5	38
4,9	41	4,10	38
9,11	41	1,3,4,5	37
1	41	2,3,4,5	37
2	41	1,3,4	37
3,4,9	40	1,3,5	37
3,5,9	40	1,3,9	37
2,3	40	1,4,5	37

From this table, the optimal balance between the number of usable cases for analysis, and the largest number of available variables, occurred where shown shaded in bold type. This data

set permitted the use of four measures of performance and provided 39 usable cases. The corresponding items in the performance construct were:

- Positive growth in turnover;
- Net profit margin percentage;
- Net profit margin growth percentage; and
- The percentage growth in the number of customers who made one or more purchases.

The composite score for the performance construct is the sum of the scores of these items.

Every effort was made to improve the confidence in the study. Further attempts were made to identify appropriate secondary data sources. National census statistics, the National Research Foundation data catalogue and market research organisations such as Webcheck, were consulted. Other sources, such as the SA Department of Statistics were checked. Personal discussions were initiated with industry experts such as Arthur Goldstuck (2004b), who could offer a list of e-tailers but without associated demographic information. As noted before, in Section 7.9.2, most businesses in the sample frame have only online e-commerce processes in common. Not one source of secondary data available on this group could be found. None of the businesses listed in the population are stock-exchange listed companies.

As a last resort an emotive appeal in the form of an email (refer to Appendix K) was sent to the businesses that did not respond to the initial survey. In order to reach the maximum number of potential respondents, and to achieve a confident result, a total 160 such emails were sent out. This number was made up of all the potential respondents (192) less those (39) that provided useful data (=153) plus a control sample of 6 (15% of the 39 respondents, who had previously responded and whose data was used). As an additional control, the 30 respondents whose data was not usable ($69-39 = 30$), were included in the email mailing list. The intention was to verify the data by checking these 36 responses against those received in the original survey.

This group were asked just four questions relating to their demographic information:

- Type of business model;
- Total annual turnover;
- Total number of employees; and
- Online trading period.

Regrettably, only 33 responses (21% of 160) were received. Of these, only 19 responses came from people who were not part of the original (69) group of respondents.

The question was subsequently raised of whether a different medium, such as the telephone, could have been applied at this point with more success. The non-respondents to the demographic email could either have been encouraged to respond, or the survey questions could have been put to them over a phone. This was not done. By this time, three months had elapsed since the original web-based survey had been terminated. It was decided that, should a respondent be personally called again, had he/she not responded to the original survey, they would already have received two reminder emails, and now a third email. There was a real concern that should they now receive an additional telephone call, respondent irritation may be raised to a level where the received data may have been suspect. This evolving, enigmatic population should not be encouraged to become averse to future research surveys. Given the dearth of new data received, there was little value to be gained from further analysis of the demographic data of these 33 respondents.

It is important to remember that this study is an investigation into strategies employed by ventures using the web as a means of doing business. Its nature – exploring the relationship between strategy and performance of web-enabled firms – appears to have little immediate precedent in the literature. The nature of this work is exploratory and conceptual, and has the specific intent of determining trends. The statistical purpose should be to determine relationships contributing to creating a foundation for future research. Statistical analysis, in this study therefore, will focus on understanding emerging trends (Kidd, 2004).

Notwithstanding the above, a comparison was subsequently made between the demographics of all the respondents (69 cases) and the usable data (39 cases). Using a χ^2 analysis it was found, at the $p = 0.05$ level, that there were no differences between the demographics of the

two groups. This means that the usable data and the total responses had no non-response error factors such as business origin (pure-play or hybrid), lifetime on the web, type or size of business.

8.4 INSTRUMENT RELIABILITY

Reliability is the ability of an instrument to accurately measure the underlying construct. Each dimension, the intended measure and its associated Cronbach's α , are shown in Table 8.4. Where an item is referred to as "deleted" in the table, it was because the instrument exhibited better reliability when it could be motivated to exclude this item from the data set. An α of 0.70 or above indicates a reliable scale (de Vaus, 1996:257). In order to not sterilise the instrument or discard what might prove to be valuable concepts, a cut-off is made at 0.6.

Table 8.4: Instrument reliability for measurement of dimensions

Dimension	Data, as analysed in the study, compensated for missing values	"Usable data" as received from respondents		All respondent data	
	α n = 39	α	n	α	n
Futurity (Optimised by deleting item 1.2)	0.75 (0.82)	0.75 (0.86)	27	0.75 (0.84)	47
Customer centricity	0.70	0.74	23	0.69	38
Macro-economic positioning	0.62	0.63	30	0.75	49
Market exploitability	0.75	0.79	32	0.75	58
Economic innovativeness (Optimised by deleting item 5.1)	0.72 (0.80)	0.64 (0.78)	29	0.71 (0.80)	48
Interjacency (Instrument optimised by deleting this dimension entirely)	-	0.31	34	0.47	56
Digital spontaneity and scalability	0.83 (Tested for split-half reliability $\alpha = 0.81$ and 0.80 for each of the split halves)	0.88	31	0.87	56

Dimension	Data, as analysed in the study, compensated for missing values	“Usable data” as received from respondents		All respondent data	
	α n = 39	α	n	α	n
Knowledge Management	0.70	0.69	29	0.67	49
Innovation aggressiveness	0.82	0.84	29	0.87	50
Equivocality (Optimised by removing item 10.5)	0.63 (0.75)	0.52 (0.69)	30	0.68 (0.75)	56
Harmony	0.91	0.92	34	0.91	60
Dynamic pliancy	0.69	0.71	35	0.68	63
Strategic architecture construct	0.76 (when tested for split-half reliability $\alpha = 0.82$ and 0.81 for each of the split halves)	-	-	-	-
Performance construct (using items P3, P4, P5 and P9)	0.63	-	-	-	-

From this table, due to their low reliability, the dimension of interjacency and three other items (questions numbered 1.2, 5.1 and 10.5 – refer to Appendix H) were removed from the data-set. The omission of the items in the performance construct has been discussed before (refer to Section 8.3). The items, and the reasons for their removal, were as follows:

1. *“1.2 Management focus too much on daily survival and forget about the long-term viability of our business.”* This question attempted to address the balance between short- and long-term perspective of management. The inconsistent answers may have been due to the fact that this question was misunderstood, and that both survival and long-term viability are adequately addressed in the respondent’s businesses. The question may have had a better response if simply asking whether a balance existed.
2. *“5.1 The only difference between a similar, non-internet business and our business today, is the fact that we are on the internet.”* This was an effort to trace the integration and innovativeness of the firm. Since most (85%) of respondents reported their busi-

nesses as e-shops, this question was irrelevant to them and the inconsistency was possibly due to not knowing how to reply.

3. “10.5 *In this organisation it is clear what our priorities are.*” The reasons for this low consistency are not readily apparent.

The low internal reliability of the interjacency dimension begs comment. Interjacency (measuring value-chain benefits, value creation through disintermediation and through alliance formation) is a reflection of the firm’s ability to create value, for example, through disintermediation, collaboration and the shortening of its supply-chain. The reliability estimate of this dimension is lower than those in the rest of the instrument. Items 1 (“*Our information technology function is better performed by ourselves than outsourced to a third party*”), 2 (“*If it is in our financial interest to do so, we will even collaborate with our competitors*”) and 7 (“*Our systems interface directly with those of our suppliers*”) do not appear to have the same consistency in responses in this dimension as the other items. Their item correlations are 0.089, 0.27 and 0.19 respectively. The reliability improves slightly if any of these items are deleted. This low reliability is considered to be unacceptable for the inclusion of this dimension into the construct.

The general low reliability of this dimension may be further ascribed to respondents from a range of widely-differing businesses having different interpretations and perceptions of the items in the instrument. Some firms who are less likely to have the resources to develop interfaces directly to their suppliers, may be more likely to misinterpret the importance of collaboration with others. There may be a tendency for some firms once online, to do as much as possible themselves. Competition has increased as more businesses come online, heightening a perceived need for secrecy. This goes some way into explaining the inconsistent results for this dimension. Collaboration is not necessarily a trait of maturity. The size of respondent businesses may also be a factor. More than half the respondents (56%) reported turnover of less than R2 million per annum. Another possible explanation is the fact that disintermediation may have been viewed by some respondents as an obvious consequence of being online. This perception could also have contributed to inconsistent responses. Due to its low reliability the interjacency dimension was excluded from the data set and all further analysis.

By virtue of the selection process for the 39 respondents the performance construct data set was complete. Some of the independent variable data (strategic architecture), however, had missing values, where respondents had selected the “Statement not relevant” option. It so happened that this amounted to less than 5% of the data. Consistent with the literature, these missing values were accommodated by automatically being replaced by their means prior to the statistical analysis (de Vaus, 1996:284-285). This was done by calculating the means of all (39) responses to a specific question, and using this value to replace a value that may be missing from one or more respondent/s to the same question. A specific example may illustrate this process. In the responses to question 1.3, three respondents (of the 39) selected the “Statement not relevant” option. The mean of the 36 respondents was calculated (5.58) and this value was inserted to replace the three missing values. This process was applied in similar fashion to all data.

The application of this process begs a question: had the policy of replacing missing values been applied to the performance construct, would more items have become available and, in the process, extended the usable data set? The capricious responses to the performance construct, addressed in Section 8.3, resulted in many “Statement not relevant” selections. Accordingly, an analysis of the data shows that 41.5% of the performance construct data were missing. Replacing so many missing values may not deliver a reliable data set. No precedent for data replacement on such a large scale could be found in the literature. If, applying a similar policy to the performance construct, and say, replacing 5% of the missing data, the question of where this could be objectively done, remains.

The regression models used and their findings are discussed in the next section, while the interpretation of the findings and implications for management will be discussed, in their context in Section 8.14.

8.5 REGRESSION MODELS

The purpose of science is to explain phenomena and such explanation may consist of indicating their causes as far as possible. Any variable may be regarded as a sufficient cause of another variable if the conditions of correlation between variables exists and the cause must precede the effect; and a third variable must be controlled (Welman & Kruger, 1999:75). In order therefore to explore the relationship in this study between the constructs, it was necessary

to consider the correlation of each dimension of strategic architecture with performance. The findings are summarised in Table 8.5. The significant findings, using $p=0.05$, are shown in **bold** typeface. It must be noted that these results are based on an analysis of the 39 cases of usable data, where survey respondents provided adequate strategic architecture and performance data. More confidence in the extrapolation of these results to the overall e-commerce industry would necessitate repeating this exercise in a few years' time when a larger sample would be possible.

Table 8.5: Summarised regression details

Strategic architecture dimension correlated individually with the performance construct	Correlation coefficient (r)	Probability that the correlation is due to chance (p)
Futurity	0.38	0.02
Customer centricity	0.57	< 0.01
Macro-economic positioning	0.23	0.17
Market exploitability	0.52	0.01
Economic innovativeness	0.26	0.12
Digital spontaneity and scalability	0.11	0.50
Knowledge management	0.14	0.38
Innovative aggressiveness	0.17	0.29
Equivocality	-0.12	0.22
Harmony	0.37	0.02
Dynamic pliancy	0.49	< 0.01

Each of the findings and graphs of the significant correlations are discussed in the sections that follow.

8.5.1 Dimension 1: Futurity

The desire for a particular future for a business is reflected in management's attitude towards strategic management. This has long been the research domain of strategy researchers as discussed in Chapter three. Using Whittington's analysis (refer Section 3.7.2) it can be expected

that the systemic approach with deliberate, pluralistic outcomes would be evident. This phenomenon is explored in the instrument by correlating futurity with performance. The results are shown in the graph below.

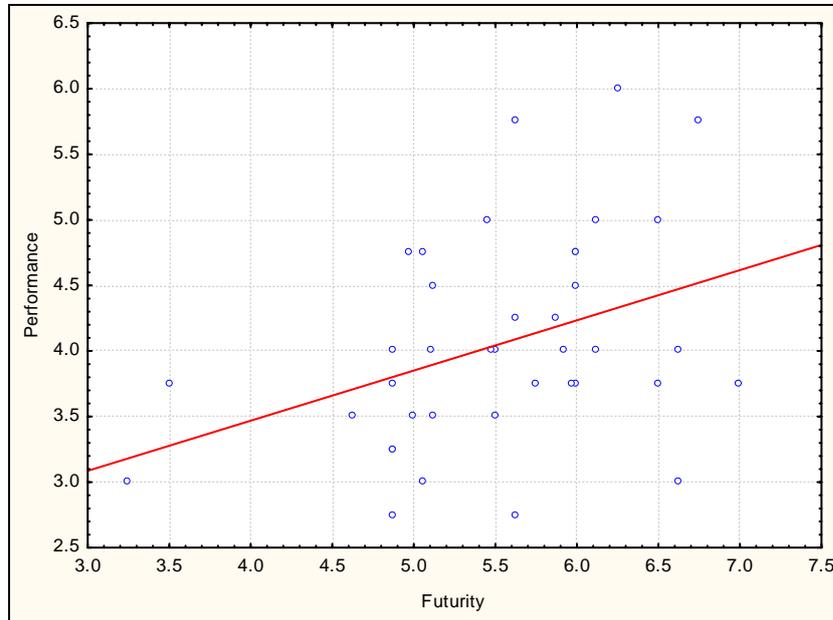


Figure 8.5: Correlation – Futurity and performance

A regression scatterplot, as in the figure, indicates three aspects of a relationship between variables: strength, direction and nature (de Vaus, 1996:174). The correlation coefficient in this case was 0.38 ($p = 0.02$) indicating a moderate (strength), positive (direction) and linear (nature) relationship between the variables. This means that there is a positive relationship between management's quest for a desired future, and the performance of the business. The low p value indicates that the result is not due to chance. The slope of the graph would indicate the sensitivity of the one variable to the other. In this study, however, it is the relationship (correlation) that is of significance.

In order to determine whether the larger or smaller firms tended to skew the findings, the regression was repeated after splitting the cases into two groups by turnover. The cut-off was an annual turnover of two million Rand. The smaller businesses represented 59% of the data subset. The analysis revealed a lower correlation only for the large companies, but this finding was not statistically significant.

8.5.2 Dimension 2: Customer centricity.

Customer centricity is a reflection of the value a business creates by having a pervasive customer-sovereignty approach in every aspect of its service. It includes creating customer lock-in through raised switching costs, website performance, the use of metrics to gauge progress and relationship management. The findings indicated a correlation of 0.57 ($p < 0.01$), with performance as shown in Figure 8.6.

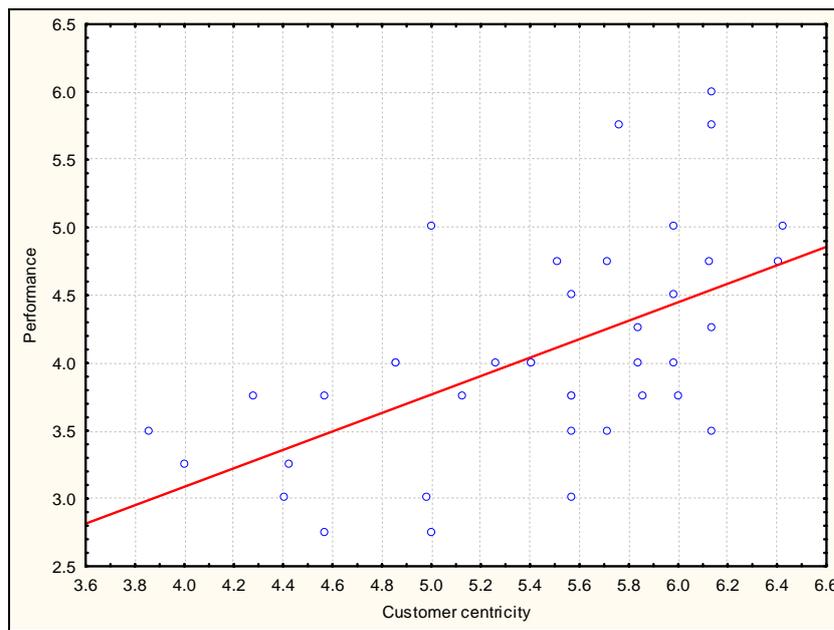


Figure 8.6: Correlation - Customer centricity and performance

The high correlation coefficient (0.57) and low probability of chance ($p < 0.01$) confirm that a significant relationship exists between customer centricity and performance. This finding supports a tenet of this study, that is that customer centricity is an important source of value creation. It is suggested by one of the fundamental principles underlying the contribution of business models to strategy for networked economy firms (refer Section 4.13).

8.5.3 Dimension 3: Macro-economic positioning (environmental factors)

The dimension of macro-economic positioning reflects the environmental and industry structural factors, benefits from Schumpeterian rents, the degree of functional integration and the firm's competitive position. It incorporates both Porter's strategies of low cost, differentiation and focus, and also the value of core competencies found in the resource-based view.

Given the academic controversy surrounding the application of some of these approaches in the networked economy, as discussed previously, a weak correlation is no surprise. In this study the correlation of macro-environmental factors with performance was found not to be statistically significant ($r = 0.23$, $p = 0.17$).

8.5.4 Dimension 4: Market exploitability

The dimension of market exploitability measures revenue flowing from intimate market examination, niche discovery, business model effectiveness and the creation of a dependent online community. It is a reflection of how effective the business's marketing plan and its implementation are in contributing towards performance. The statistical analysis indicated a strong correlation ($r = 0.52$, $p < 0.01$) in this study, as shown in Figure 8.7.

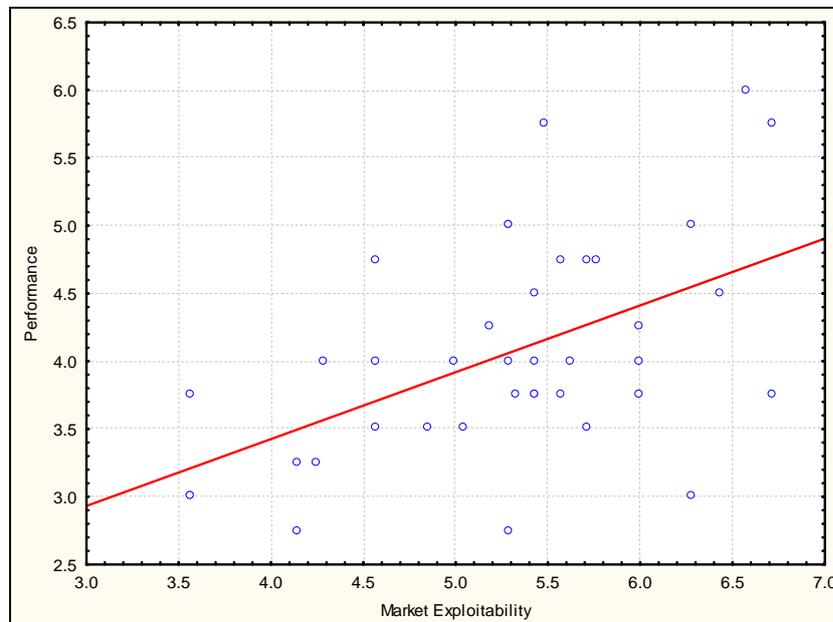


Figure 8.7: Correlation – Market exploitability and performance

It was not surprising to find this strong relationship, especially from the networked economy firms whose performance is closely tied to value creation through developing, identifying and exploiting market opportunities.

This finding highlights the need for thorough market niche research, nurturing a marketing orientation throughout the organisation, developing effective pricing strategies and creating a dependent online community.

8.5.5 Dimension 5: Economic innovativeness (“differentness” from an offline model)

The dimension of economic innovativeness is a measure of value potential flowing from maturity of the firm, as proposed by Timmers (2000) (refer Figure 4.7). Maturity is indicated by business model innovation and functional integration. It is measured by the degree of web innovation, process enhancement, the application of internet technologies, and not by complacency. This dimension also reflects the maturity of an electronic business. As businesses evolve up the innovation-integration scale, they become quite different from offline businesses. In South Africa, however, most ventures appear to be not too different from an offline venture engaged in the same business. As shown in Figure 8.3, 85% of all respondents classify themselves as being e-shops (the others are auctions and value-chain service providers). The value-creation ability of a business, as it differentiates itself from an off-line business through being different and creating value through functional integration, is also captured in this dimension.

The findings of this study produced a lower correlation ($r = 0.26$, $p = 0.12$) with performance, but a higher “p” value indicating a higher probability of chance. This is not unexpected, as 39% of the data subset of respondents indicated that their online trading period is less than three years (refer Figure 8.4). Only with time can innovation and integration be expected to occur.

8.5.6 Dimension 7: Digital spontaneity and scalability

Digital spontaneity relates to the degree of instinct in the proactive behaviour of the firm’s (predominantly) information systems, when responding to technology and market developments. It incorporates elements of the business’s speed and flexibility of implementation of information technology systems, and the firm’s ability to match its systems with business demands. Its outputs would include how to profit from inimitable information and communication technologies. The correlation coefficient is low and p is high, indicating no relationship ($r = 0.11$, $p = 0.50$) between performance and the dimension of digital spontaneity and scalability for this sample.

This is an unexpected finding and required further investigation. In order to establish whether the correlation was dependent on the size of the business, a further regression was done after splitting the respondents into two groups by size. There appeared to be no significant correla-

tion between the dimension of digital spontaneity and scalability, and performance. The correlation of this dimension with performance for smaller businesses showed a coefficient (r) of 0.22, with probability due to chance (p) of 0.42, and for those with larger businesses $r = -0.11$ and $p = 0.63$ implying size of business does not matter. Many of the companies outsource their computer technology, hosting and payment processes to third parties. This is a common characteristic particularly evident amongst the smaller enterprises. It is possible, then, since many of the respondents have outsourced their technology, that they consider this to be an issue for the hosting company.

8.5.7 Dimension 8: Knowledge management

This dimension relates to the ability of the firm to turn knowledge into competitive advantage. It includes how a firm attracts, motivates and retains explicit skills, its views and benefits of its tacit knowledge resources. Statistical analysis revealed no correlation with performance ($r = 0.14$, $p = 0.38$). This was a surprising finding since the instrument probed issues such as turnover of skilled staff, effective communications, and a culture of knowledge sharing.

Almost 54% of all respondents “mostly agreed” or “totally agreed” that “the turnover of our skilled staff is below the industry norm”, and 52% of respondents were satisfied with the levels of communication within the organisation. Almost 60% believed that their culture of knowledge sharing impacted on profitability. The low correlation raises the possibility that the measures in the questionnaire did not adequately reflect the knowledge management dimension or possibly the performance dimension.

8.5.8 Dimension 9: Innovative aggressiveness

Innovation is fundamental requirement for the target population of this study. In order to encourage a spread of responses, the instrument measured not simply innovation but the business’s approach or attitude towards innovation. The survey questions were focused around the aggressiveness with which management approached innovation. The questions related to the capital investment in research and development, formalising innovation in employee contracts, measurement, creative thinking, reward and profit contribution.

In the first instance, the correlation between innovative aggressiveness and performance is weak ($r = 0.29$, $p = 0.17$). Since this finding was not expected, a further analysis on the effect

of company size on this dimension was done. The findings by company indicated that there was a difference in the correlation between innovative aggressiveness between the larger and smaller businesses.

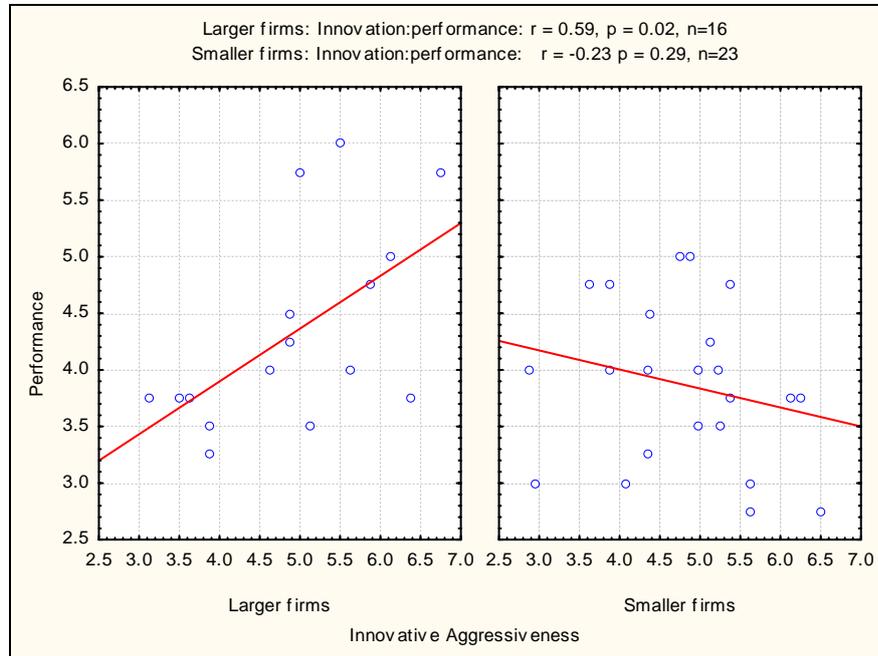


Figure 8.8: Innovative aggressiveness and performance (small and large firms)

As shown in Figure 8.8 a positive correlation was found for the larger firms between performance and innovative aggressiveness. The implication may be that the larger firms have more resources at their disposal, and can therefore afford to adopt a more aggressive stance towards innovation than the smaller firms.

8.5.9 Dimension 10: Equivocality

The dimension of equivocality encompasses management's analytical ability and attitude towards risk-taking, dealing with uncertainty and setting priorities. It includes a measure of the firm's problem-solving ability and resolving issues into simple elements by the application of logic. The statistical analysis revealed no significant correlation between equivocality and performance ($r = -0.20$, $p = 0.22$).

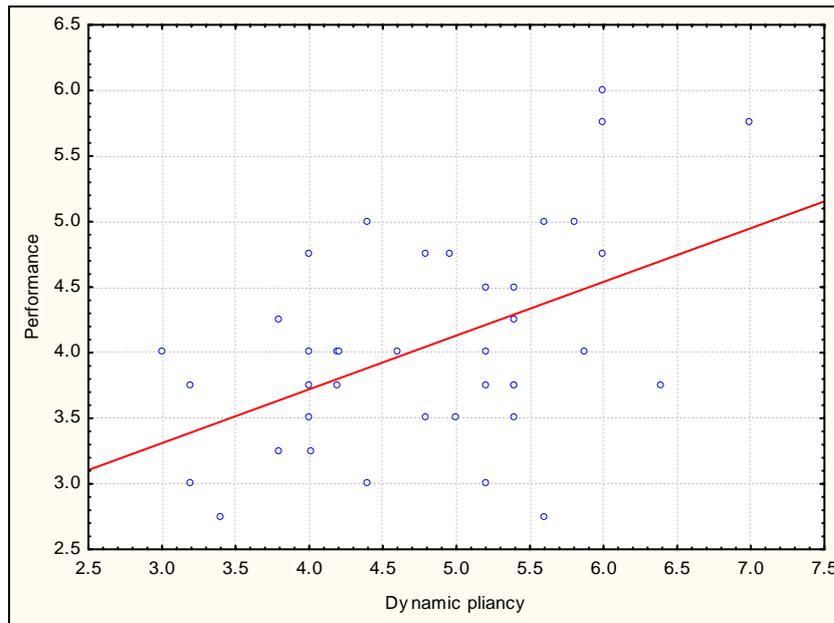


Figure 8.10: Correlation – Dynamic pliancy and performance

This is another strong, positive correlation with performance ($r=0.48$, $p<0.01$). As discussed in Section 4.2, the properties of the networked economy include turbulence and change in which speed, surprise and innovation are key contributors to effective competitive advantage. This observation is significant and confirms the positive contribution of agility to the performance of South African networked economy ventures.

8.6 BEST-SUBSET REGRESSION ANALYSIS

In order to identify the dimensions that are significant in the previous regression model a best subset analysis was performed. The analysis of all combinations of all eleven independent dimensions delivered 2000 cases. This analysis was performed in order to identify the simplest model for the best results in this study. Figure 8.11 shows two significant breakpoints: one at three dimensions, and one at six, where the differences in the slope change the most. For this reason, both these cases are considered in the discussion that follows.

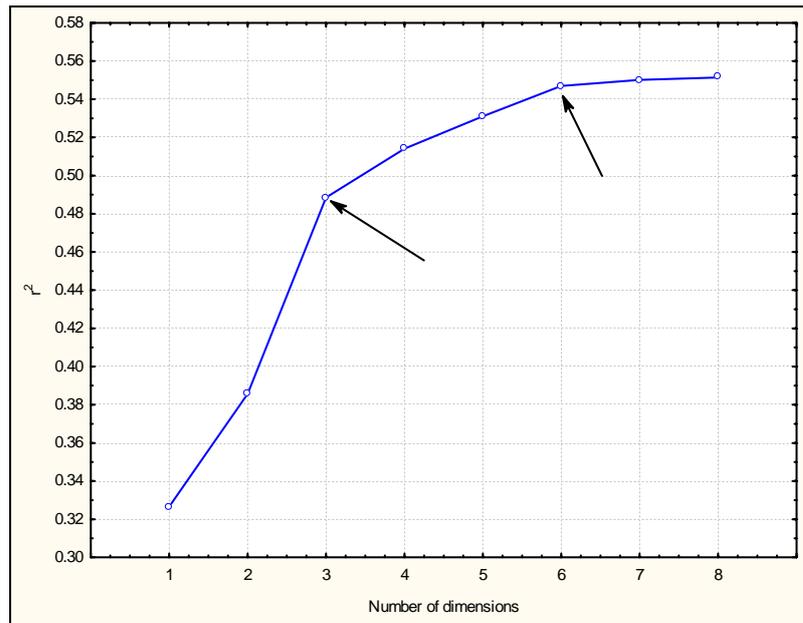


Figure 8.11: Graphic: Best subset analysis

The regression summary for the six-dimension case is shown in the tables as Appendix I. In the six-dimension case, customer centricity, digital spontaneity, knowledge management and dynamic pliancy account for 46% of the variation of performance. Digital spontaneity and knowledge management make a lesser contribution. In the three dimension case, the dimensions of customer centricity, digital spontaneity and dynamic pliancy account for 44% of the variation of performance. It is interesting to note that digital spontaneity is negatively correlated. This phenomenon is discussed later (refer to Section 8.12). Innovative aggressiveness was not significant in either the six or three dimensional cases. This was due to the differences in correlation by size of business, as discussed earlier in Section 8.5.8, which concealed its effect on performance.

8.7 CLASSIFICATION AND REGRESSION TREES (CART) METHOD

One of the methods available when analysing classifications or regressions, is the CART technique. Tree classification techniques have several advantages, simplicity of results being the most evident. This simplicity is useful not only for purposes of rapid classification of new observations, but can also often yield a much simpler model for explaining why observations are classified or predicted in a particular manner. Tree methods are particularly well suited to data mining tasks, where there is often little *a priori* knowledge, or any coherent set of theories or predictions, regarding which variables are related and how. In those types of data

analyses, tree methods can often reveal simple relationships between just a few variables that could have easily gone unnoticed using other analytic techniques (Statsoft, 2004). Although the number of data in this study are few, the CART analysis was done to create a context in which to view the findings discussed in the previous section. The tree diagram output of the CART analysis is represented graphically in Figure 8.12.

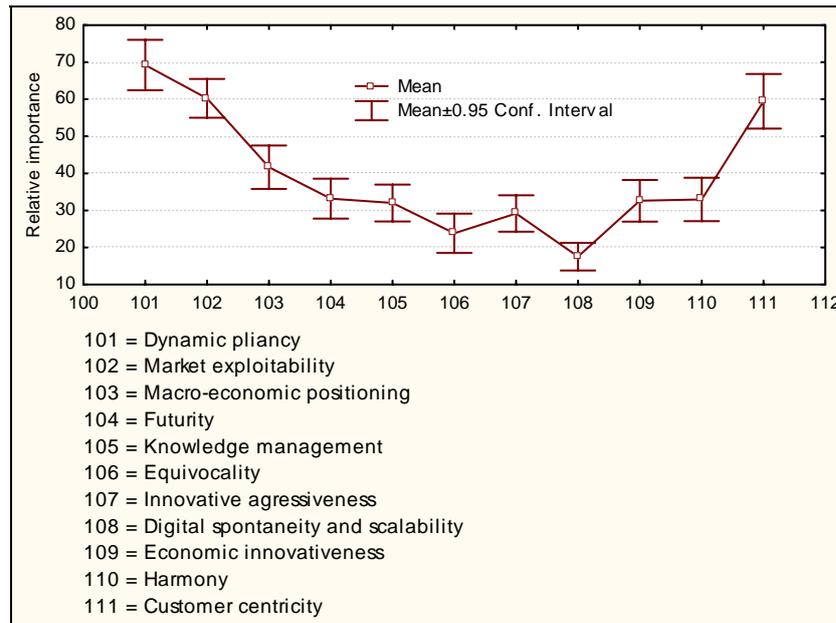


Figure 8.12: CART analysis output

This graph shows that dynamic pliancy, market exploitability and customer centricity, in this study, contribute the most to explaining performance. Bootstrapping samples a data set with replacement (where a single case may be randomly sampled several times into the bootstrap set). The bootstrap, a non-parametric technique, was applied to the data, and the figure below with the 95% confidence intervals shown, indicates how performance might be indicated by the specific score of one or more of the dimensions.

The low relative importance of Digital spontaneity and scalability is an unexpected finding – especially given the nature of the phenomena under investigation. Later, this dimension is found to be not only significant, but appears negatively correlated with performance. Some factors that may contribute to these contrarian developments are discussed in more detail in Section 8.12.

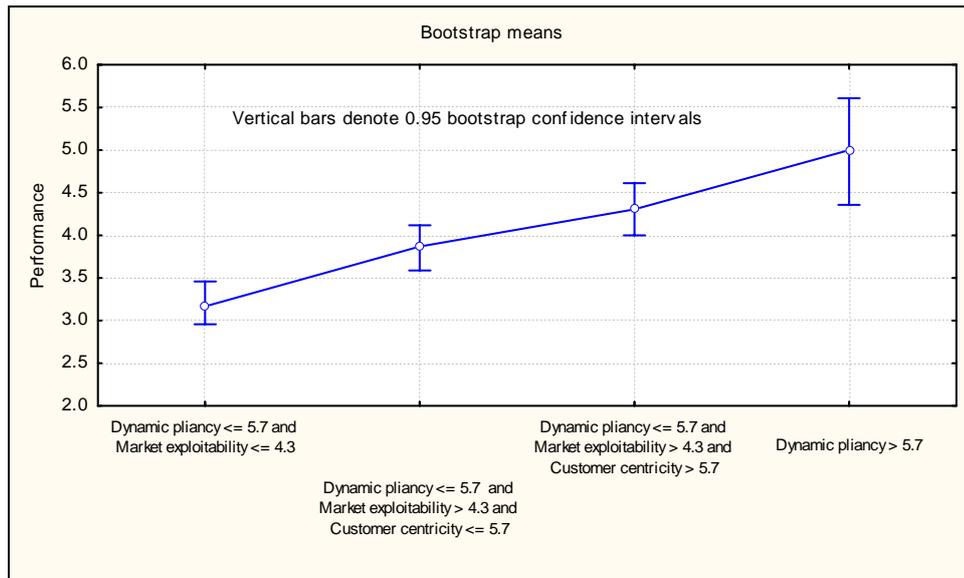


Figure 8.13: Bootstrap presentation of significant dimensions and performance

As stated before, it is not the purpose of this study to determine absolute values. In a study such as this it is the relationships that are relevant. Care should therefore be exercised in attempting to read too much into the values cited in the figure. This interpretation is included for the benefit of future studies in the same vein.

The values in Figure 8.13 imply that, if dynamic pliancy and market exploitability, for instance, have scores arising from the instrument (the values range from 2 to 7 as discussed in Section 7.7), of less than or equal to 5.7 and 4.3 respectively, performance would be at a particular level. Should dynamic pliancy be less than or equal to 5.7, and market exploitability be greater than 4.3 and with a customer centrality score of 5.8 or less, a better performance may be indicated. A better score in customer centrality (greater than 5.7) may indicate a further improved performance. Finally, in this analysis, when taken to extremes, the CART analysis indicates that a high score in dynamic pliancy alone may indicate even better performance. This specific conclusion must be interpreted with care since dynamic pliancy has a wider confidence interval, indicating greater uncertainty.

8.8 PLIANCY, CENTRICITY AND MARKET EXPLOITATION

The three dimensions: dynamic pliancy, customer centrality and market exploitation, are discussed in this section, in terms of the findings. Dynamic capability is the root of dynamic pliancy. It reflects those processes in a business that use resources to match and create market

change. Effectively deployed, such capabilities make the organisation pliant, enabling it to readily take advantage of opportunities in evolving markets. In the turbulent networked economy, dynamic pliancy is the result of simple, experiential processes that rely on quickly created new knowledge and iterative execution to produce adaptive outcomes. These capabilities are necessary, but not sufficient conditions for competitive advantage. The dimension of dynamic pliancy makes a positive and important contribution to the performance of a business in this study. This finding is consistent with the literature (refer to the detailed discussion of dynamic capability in Section 5.2).

The second important dimension is customer centricity. A customer-centred perspective is an important source of value for online firms. It embraces the overall attitude of the business towards its customers. This study also measured the content and reach of this approach, and the business's ability to raise switching costs and create lock-in. Responsibility for customer centricity transcends functional structure; it is not only the responsibility of marketing, public relations, operations or information technology. Every customer-facing transaction or process, whether electronic, voice, documented or other, has the customer at its focus. This dimension includes items such as customer bonding, website performance, after-sales follow-up and relationship management. Through a value proposition, customer centricity is at the core of the business model and seeks to bind the customer to the business through raising switching costs. Customer lock-in results from successful customer centric behaviour. The responses from this survey indicate that, for this group of respondents, customer centricity is an important dimension.

Market exploitability is the firm's ability to source revenues from market opportunities and imperfections. This dimension includes measures of thoroughness in market analysis, the presence of a marketing orientation, the firm's pricing policies, finding and exploiting niches and developing and nurturing a community, which eventually creates lock-in through dependency. This phenomenon is not unexpected since the linkage between a marketing focussed organisation and its performance has long been the subject of academic study. This is true for traditional business and is indicated for this study as well.

The identification of these three dimensions as the important ones is consistent with literature (refer for example, Amit & Zott, 2001; Andal-Ancion, 2002; Berryman, Harrington, Layton-Rodin & Rerolle, 1998; Blackwell & Stephan, 2001; Chatterjee, *et al.*, 2002; Eisenhardt &

Martin, 2000; Hagel & Singer, 1999; Hax & Wilde, 2001b; Sambamurthy, Bharadwaj & Grover, 2003, and others). In essence, customer-centric dynamism amongst this group of South African web-enabled e-commerce firms, is an indicator of success. In the strategic architecture philosophy, the dimensions of dynamic pliancy ($p < 0.01$), customer centricity ($p < 0.01$) and market innovativeness are shown to be emerging determinants of success (refer to Table 8.5). Taking the findings as shown in Figure 8.13 to an extreme level, the results indicate that dynamic pliancy alone becomes the most important indicator of success. The dynamic firm, investing resources in flexibility, constantly innovating and learning through pilot studies, employing multi-skilled people, who are able to keep the firm agile enabling it to change direction with minimum disruption, could be successful.

Those e-commerce businesses not able to achieve so high a score for dynamic pliancy, may achieve success if they have better scores for customer centricity, and then market exploitability. Customer centricity, deriving value through customer bonding, lock-in and raised switching costs, supplemented by a high-performing website, is a characteristic contributing to success. Performance is further supported by market exploitability, where the firm obtains revenues from intimate market examination, exploiting a niche, developing an effective business model – all leading to the creation of an online community who eventually become dependent on the firm.

Although there is a temptation to take these findings at face value and extrapolate them to the population, interpretation must be done in the context of the sample frame. As pointed out earlier, the sample population consisted of 192 firms. In total, 69 non-random responses were received (35.9%) and of these, only 39 responses (20.3%) provided data that could link strategic architecture with performance. Mindful of this caveat, therefore, it may be said that amongst some South African e-commerce firms, customer centricity, dynamic pliancy and market exploitability, among the eleven dimensions identified, appear to be the most important dimensions affecting performance. These three dimensions are amongst eleven that make up the strategic architecture construct. The linkage between strategic architecture and performance is explored in the next section.

8.9 CORRELATIONS – STRATEGIC ARCHITECTURE AND PERFORMANCE

This study was initiated to determine whether an effective strategy would result in improved performance. To confirm this opinion, it is necessary that a relationship exist between the strategy construct and the performance of the commercial web-enabled enterprise.

The score for each strategic architecture dimension was calculated from the mean of the items of each dimension. A compound score for the construct of strategic architecture was then developed by summing the scores of the dimensions. The score for the performance construct was the mean of its associated items.

The correlations were determined for three cases. The regressions are shown in the following three figures. In the first case, the correlation between strategic architecture and performance was determined using eleven dimensions.

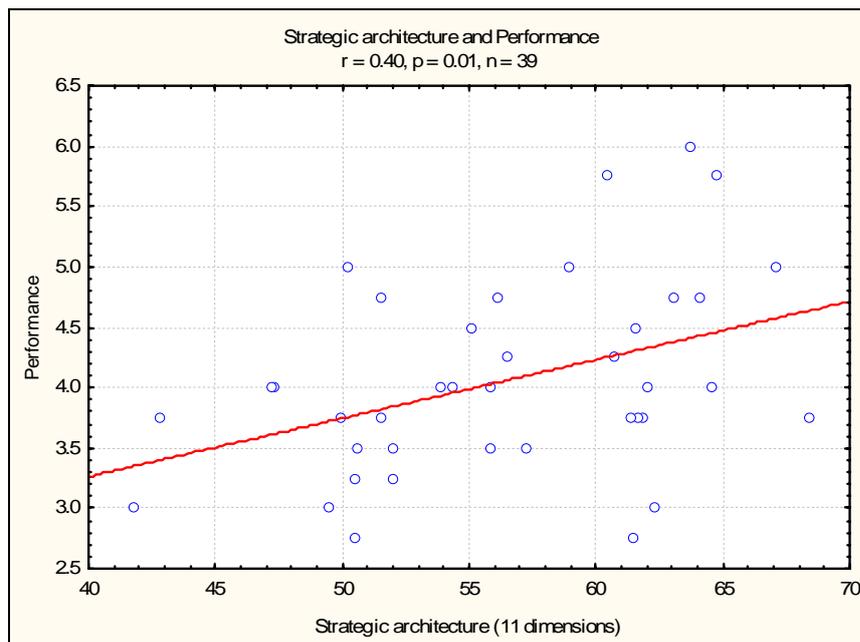


Figure 8.14: Regression – Strategic architecture (11 dimensions) and Performance

In the second case, the correlation between strategic architecture was determined using the six dimensions identified earlier.

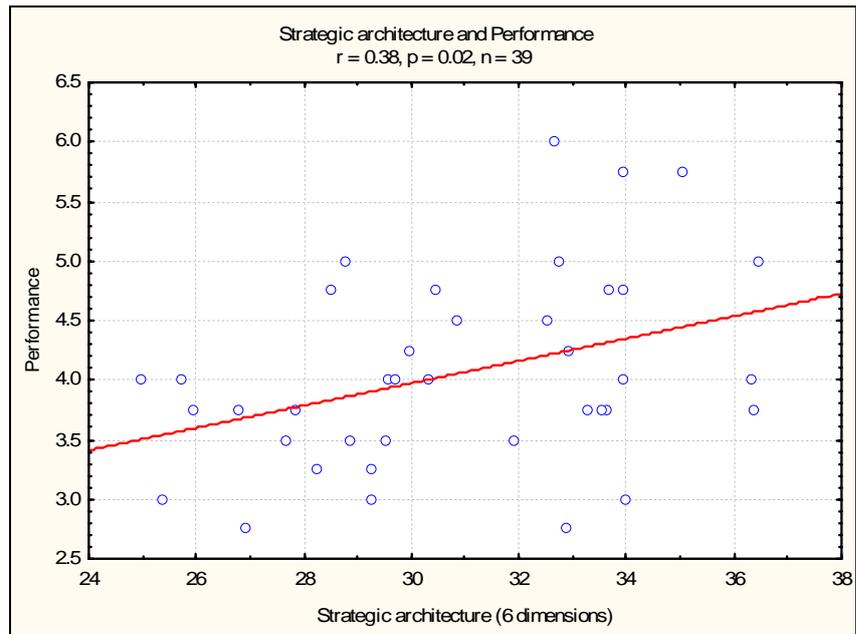


Figure 8.15:Regression – Strategic architecture (6 dimensions) and Performance

The third case considered strategic architecture and performance using the three dimensions identified before.

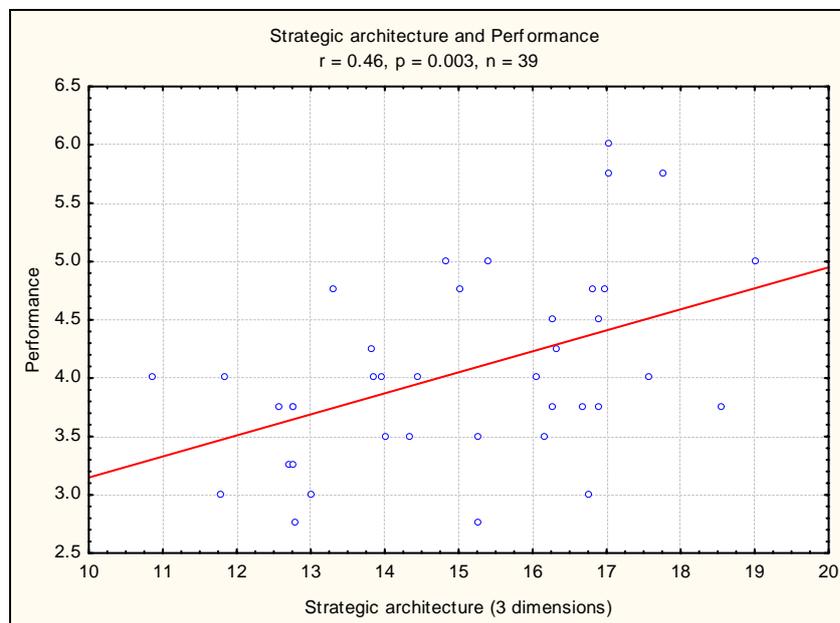


Figure 8.16:Regression – Strategic architecture (3 dimensions) and Performance

In every instance, a statistically significant positive correlation was observed. The table below summarises the findings.

Table 8.6: Correlations between strategic architecture and performance

Number of dimensions used in the regression	Correlation coefficient (r)	Probability that the correlation is due to chance (p)
Eleven dimensions	0.40	0.01
Six dimensions	0.38	0.02
Three dimensions	0.46	<0.01

A positive correlation was observed between strategic architecture and performance for eleven dimensions. The correlation coefficient of 0.40, when combined with the probability that the finding is due to chance of less than 5%, indicates an acceptable result. In order to determine whether this finding remains valid for fewer dimensions, the correlations of the 6-dimensions and 3-dimensions identified before, was done. In the six dimension case, the significant positive correlation continued to be indicated between strategic architecture and performance, but at slightly lower levels ($r = 0.38$, $p = 0.02$). In the three dimension case, the correlation between strategic architecture and performance ($r = 0.46$, $p < 0.01$) was found. The quality of the regression improved as the number of dimensions reduced to 3. In all cases, the relationship between strategic architecture and performance remains significant, in line with the study hypothesis.

Item P3 of the performance construct produced 51 valid responses (refer to Table 8.3). It is possible to argue that a regression could be done on the extent to which these 51 cases show that the Strategic Architecture is useful in explaining the variability of one dimension of the performance construct, for example P3. However, in Chapter 6 it was argued that no single item of performance would adequately measure business performance of web-enabled firms; hence the complex nature of the performance construct. To disaggregate the performance construct, therefore, into its individual items, merely to establish whether some form of correlation exists between the Strategic Architecture and a single item of performance, was judged to be inappropriate.

On investigating the categorised numeric responses to the performance items in the questionnaire, it is observed that few respondents selected answers in the “51% - 75%”, “76% - 100%” and “More than 100%” categories. As an experiment, these responses were collapsed into three categories, namely “Negative”, “Less than 25%” and “More than 25%”, and the re-

sponses to P4, P5 and P9 averaged as a new measure of performance. Intuitively, these collapsed scores should give three categories of responses which could broadly be described as “Poor performance”, “Average performance” and “Good performance”. The regression of the 3-dimension Strategic Architecture construct versus this new measure of performance gave a correlation coefficient of only 0.29 ($p=0.08$). This shows that the collapsing of the data does not add any further insights. The low number of responses to the categories of superior performance, however, appears to indicate that an initial different subdivision of the performance categories in the instrument may have been more effective. This is discussed in more detail in Section 8.13.

8.10 FINDING: STRATEGIC ARCHITECTURE AND PERFORMANCE

Strategic architecture, for a networked economy firm in the context of this dissertation, was defined as a philosophy of strategic intent and value creation necessary for a firm in striving to meet the practical and expressive requirements of its constituents. It was seen as a process of creative design behind the firm’s value proposition. It forms the basis for a reasoned judgement of a business’s performance. Strategic architecture, posited as the independent variable in this study, is a philosophy or orientation reflecting the attitude and behaviour of management in their formulation and institutionalisation of a strategy for sustainable competitive advantage. As the most fundamental “canvas” upon which a business’s strategy may be painted, strategic architecture is reflected as a philosophical thread present at all levels of a business. It directs, aligns and delivers coherence in business decisions, guiding corporate priorities and values, forming an enabling platform for business strategies. This is represented by a complex construct described by 12 dimensions. (Note that the dimension of inter-jacency was found to have a low internal consistency and excluded from the subsequent statistical analysis).

Business performance is the dependent variable in the study. It is framed within the broader context of organisational effectiveness. Based on the study of metrics and other determinants of performance, its dimensions include efficiency, profitability, growth, value added, market performance and e-commerce metrics. The findings, therefore, indicate that amongst the South African e-commerce firms of this study, performance is linked to strategic architecture.

8.11 PURE ONLINE AND HYBRIDS – DIFFERENT STRATEGY CONTENT

South African businesses using electronic commerce for delivering products or services to consumers, are the object of this study. Some businesses may be those that were established as pure online businesses from the beginning. It is possible that they viewed and/or formulated strategy differently from the hybrid firms that were established as the online venture of an offline firm. In order to explore whether the strategic architecture of pure online firms differed from that of the hybrids firms, an analysis of variance (ANOVA) test was done considering each dimension in turn.

Table 8.7: The differences in the strategic architecture of pure and hybrid firms

Dimension	Mean (pure firms, n=26)	Mean (hybrid firms, n=43)	p
Futurity	5.80	5.35	0.08
Customer centricity	5.70	5.25	0.04
Macro-economic positioning	4.95	4.90	0.28
Market exploitability	5.55	5.10	0.04
Economic innovativeness	5.50	4.55	<0.01
Digital spontaneity and scalability	5.10	4.60	0.05
Knowledge management	6.00	5.20	<0.01
Innovative aggressiveness	5.25	4.60	0.05
Equivocality	4.55	4.90	0.15
Harmony	6.10	5.20	0.01
Dynamic pliancy	5.15	4.60	0.03
Performance construct	4.30	3.90	0.18

Using as the criterion, $p = 0.05$, the most significant differences are shown in the above table in **bold** type. Pure and hybrid firms seem to be similar with regard to the dimensions of Futu-

rity, Macro-economic positioning and Equivocality. The three dimensions with the lowest p values are economic innovativeness, knowledge management and harmony. These show the most significant differences in their means. In each case the pure online firms were found to have the higher average score.

Economic innovativeness measures the degree of web innovation and process enhancement through the application of internet technologies. This dimension reflects the “differentness” of an online venture from an offline business. It measures the differing approaches that management may have, to how the business should be structured in order to operate more effectively. This differing approach may lead to conflict with the offline parent if the hybrids are “held back”. Economic innovativeness is not an important dimension in strategic architecture. The implications of this finding may lead to management frustration, but should not impact significantly on the performance of the business.

Knowledge management, in the context of this research construct, refers to managing knowledge resources for competitive advantage, and includes the perspectives of knowledge as an object, tacit knowledge in people and how knowledge is shared. The findings show a significant difference between the average scores of strategic architecture for pure online firms and hybrids. The probability of the difference being due to chance, the p value, is less than 0.01. This implies that the pure online companies possibly value knowledge management more than do the hybrids. Knowledge management, however, as discussed in Section 8.5.7, was shown earlier, not correlated with performance.

Harmony is the result of a central theme or vision that unites the business and aligns the behaviour of management. As discussed earlier (refer to Section 5.3), the founder’s vision tends to play a central role in harmony for some online firms. This finding shows that harmony is different for the hybrids. The difference between pure online firms and hybrids is significant. The implication here is that the vision of the entrepreneur, founder or managing director plays a more crucial role for pure online firms than for the hybrids. Since harmony was found to have a significant correlation, this difference may have some influence on performance.

To a lesser extent, the difference in the means between pure online firms and hybrids are found to be slightly less significant in the dimensions of customer centricity, market exploita-

bility, digital spontaneity and scalability, innovative aggressiveness and dynamic pliancy. Customer centricity and dynamic pliancy, important findings for strategic architecture, appear to be different for pure and hybrid firms.

The dimensions where there is no significant difference between the groups are futurity, macro-economic positioning and equivocality. This is not unexpected as every business manager shows some degree of strategic behaviour aiming at achieving a desired future for their firm. Macro-economic positioning, encompassing the positioning-based view, is important to every firm. Being positioned to derive income streams from a profitable industry is relevant to all, independent of pure or hybrid origins. Equivocality, the attitude towards risk is also shown as a generic trait. This is an interesting observation since online firms, due to the nature of the challenges they face, could have been expected to be more risk-averse.

A final comparison was made between pure online firms and hybrids to determine whether there is a difference in performance. The statistical test revealed no significant difference in the average performance scores between pure online firms and hybrids. The reported p value was 0.18.

8.12 UNEXPECTED FINDING

The dimension of digital spontaneity and scalability emerged as the least “important” dimension, and warrants discussion. This finding was unexpected since, by implication in the networked economy, computer systems providing connectivity and information are indispensable resources. The dimension of digital spontaneity and scalability captures the instinctiveness and proactiveness inherent in the systems of a business, and how it grows its technology capability to match business demands. This dimension also includes how the firm profits from its information and communications technologies (ICTs) and benefits from the alignment of information technology with business objectives. It includes items describing online availability, technology dependence and research and development. This dimension measures executive attitudes, management information system performance, the IT-spend and the approach towards legacy systems. In the questionnaire, this dimension delivered the second highest reliability score of all with a Cronbach α of 0.83. In the findings, however, it is seen to be negatively correlated with performance. In the CART analysis output, (refer Figure

8.12) the dimension of digital spontaneity and scalability again appears to have low importance.

One possible explanation stems from the possible outsourcing of technology. In the data-gathering process the client lists of hosting firms such as MWeb and Tiscali were consulted. These service providers offer hosting facilities with rates that are especially attractive to small businesses. Many of the smaller firms (refer Figure 8.1) may outsource their e-commerce processes to a third party. In such cases there may be a predisposition to also delegate all the associated information technology strategies to the hosting organisation. The respondents to this section of the survey may be reflecting such an abrogation of responsibilities. It matters little to a respondent's firm that may have outsourced its e-commerce processes whether there is sufficient information technology capacity to accommodate growth. Bandwidth, online availability and response rates would be seen to be the responsibility of the hosting business are of low importance to such a respondent. In this study, all dimensions, with the exception of interjacency, indicate reliable results and are to different degrees prerequisites for effective performance. The implications of this study are discussed in Section 8.14.

8.13 THE DEVELOPMENT OF THE PERFORMANCE CONSTRUCT SCALES

The range of the Likert scale for the performance construct was not a trivial exercise. The questionnaire makes use of a six-point Likert scale with a single "Statement not relevant" option. There was some discussion in the literature around neutral-point bias therefore, as motivated before, it was decided to use a six point scale. Not wanting to introduce confusion the scale of the performance construct followed that of the strategic architecture construct and continued to make use of a six point scale.

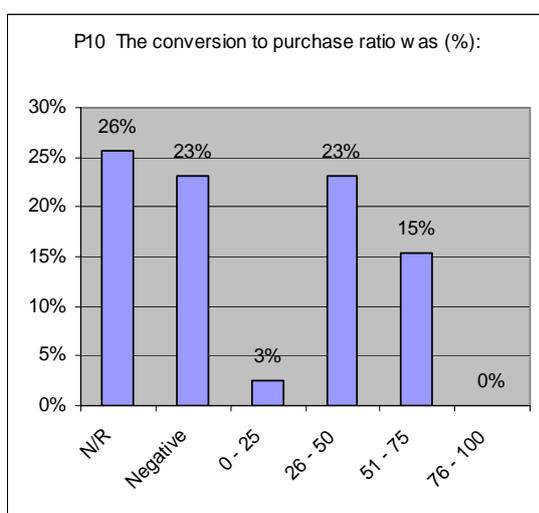
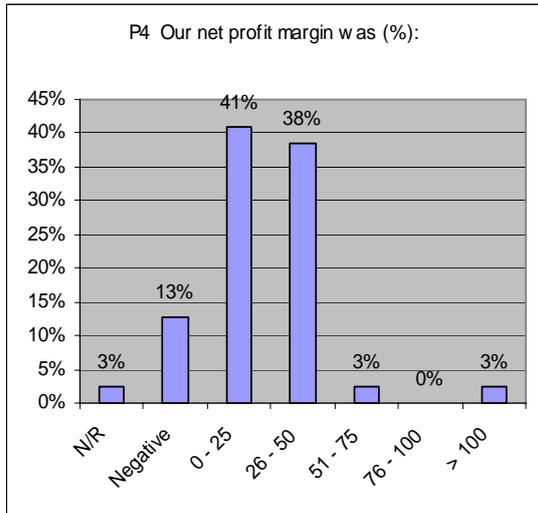
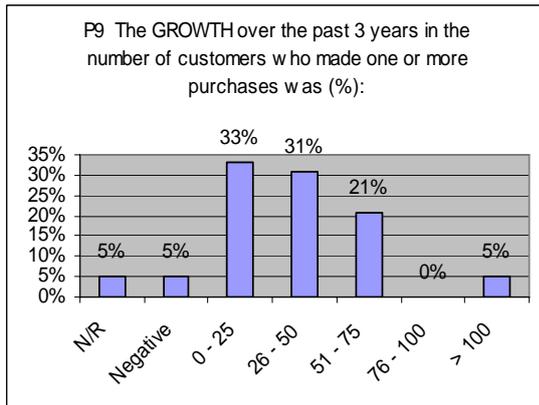
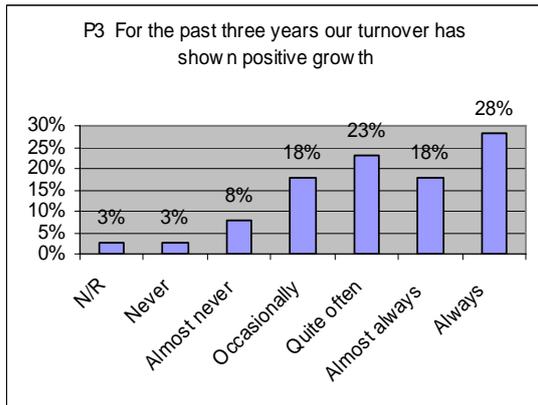
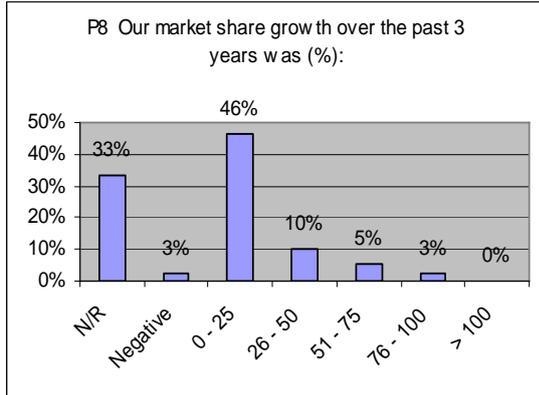
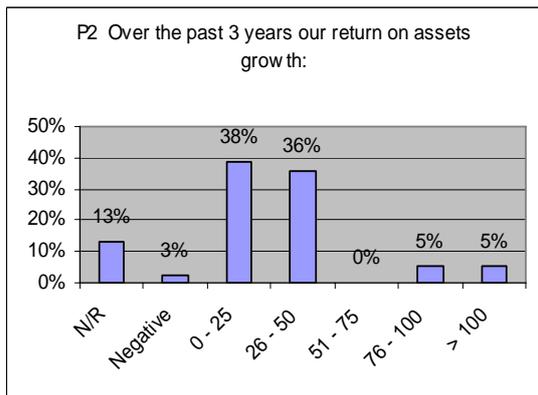
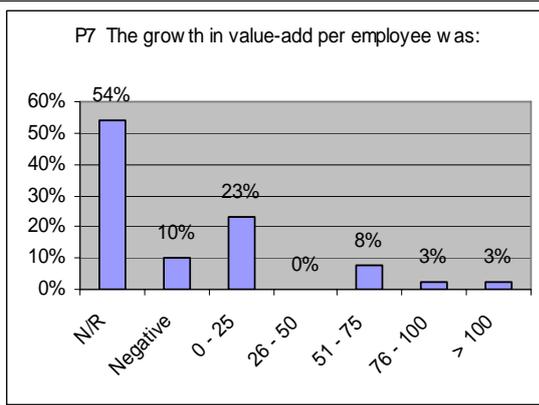
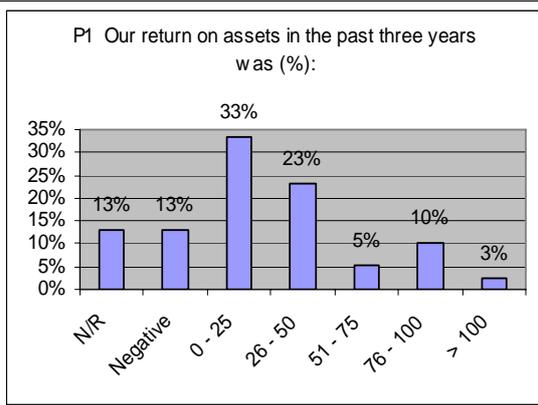
The performance construct questions occurred at the end of the questionnaire. The reason for this placement was that they may have required the respondent to perform some introspective calculations. Of all the items in the instrument these were the only ones that required the respondent to do some research into the performance of their business before being in a position to answer the questions. If these questions had been encountered at the beginning, the respondent may have thought that the entire questionnaire was equally demanding and thus elected not to participate.

A suitable scale now needed to be selected for the quantitative questions. The first concern was what range should be used. Again, for respondent convenience the range should be the same for all the quantitative questions. The population of web-enabled commercial enterprises is still at the early stage of its growth and evolution. The ranges selected would have to be broad enough to reflect this growth, yet not too small to reduce resolution and end up with clustered results. The intention is to have one scale, applicable to all the qualitative items in the performance construct that would capture the entire spread of performance on a single six-point scale.

There were few guidelines available. The literature offered no readily-available precepts for measuring performance of web-enabled ventures, who, due to their extraordinary complex behaviour have quite specific requirements. One of these factors, for example, is a measure that would adequately reflect the wide range in performance of the dot.coms. There is anecdotal evidence showing solid growth amongst some firms, but there are also spectacular failures. One guideline was the performance measures in the Technology Top 100 companies' questionnaire (da Vinci Institute, 2003). Another guideline was expert input – the list of persons consulted appears as Appendix L.

In the questionnaire, the first scale caters for negative performance. This is logical and easy to measure. This selection left a need for five further options. The top scale should cater for more than double performance, so the scale of "More than 100%" was chosen. This left four options which were divided into four equal ranges.

The early versions of the questionnaire was circulated for expert opinion. None commented on the range of the performance scale, so this was left unchanged. There were also no adverse comments from the pilot study group. Once the data had been received the scales could be re-evaluated for spread and clustering. The graphs on the next pages show the (39) responses to the 11 performance construct questions and provides some comments on the spread of the results.



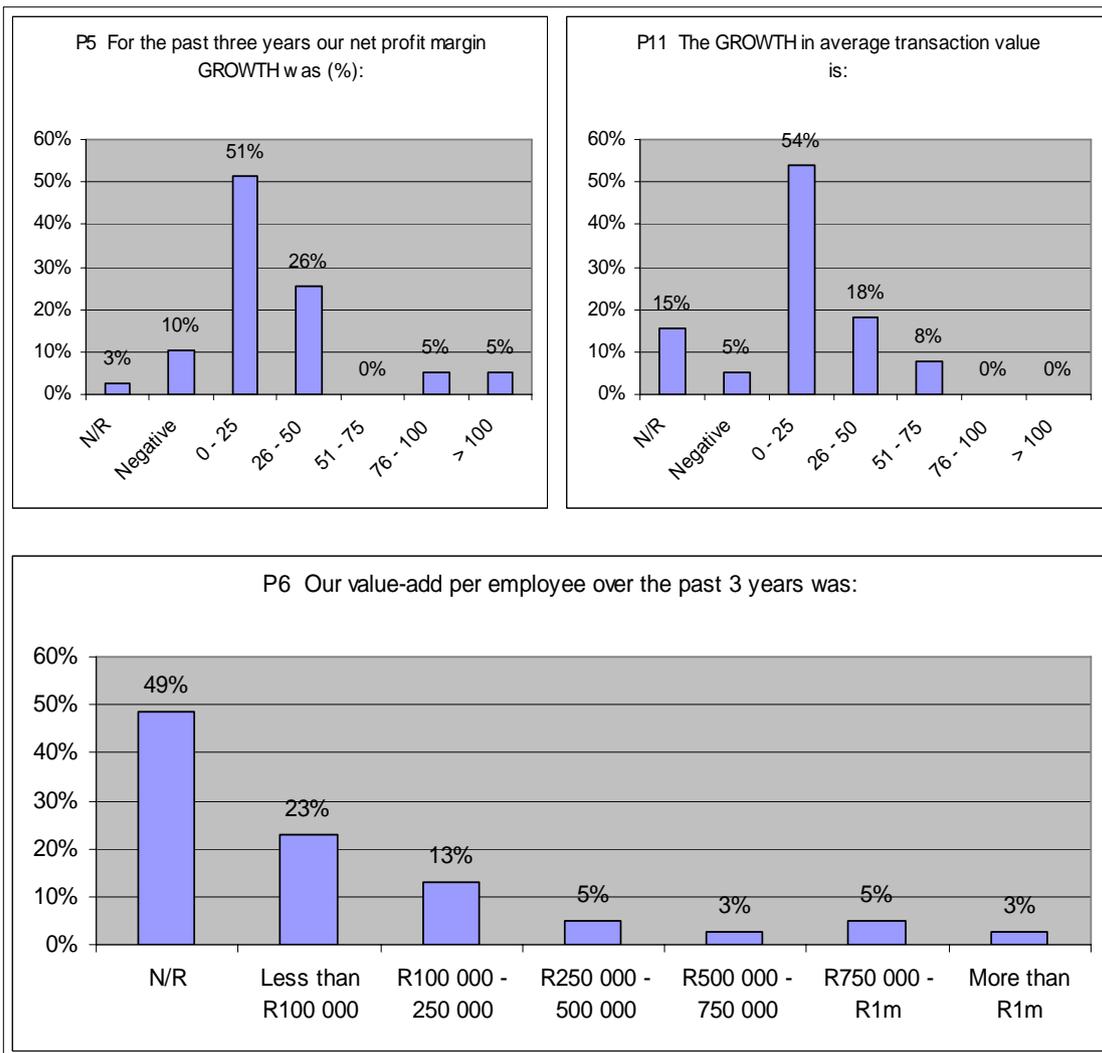


Figure 8.17: Responses to the Performance Construct questions

Note that in the above figures, the abbreviation N/R reflects responses to the “Statement not relevant” option.

In most cases the scales seem to have delivered a reasonable balance between range and resolution. Questions P2, P4, and P8 may have benefited if the scale had ranged between 0 and 50%, rather than 0 and 100%. Question P11 also reflected some clustering in the 0 – 25% range. It may be useful in future studies to bear these findings in mind.

8.14 IMPLICATIONS FOR MANAGEMENT

The data subset was further examined for inter-item correlations to validate against the literature and derive implications for management. The correlation matrix, which is attached as Appendix J, produced values for each of the dimension items. These were summarised and all correlations that were significant ($p \leq 0.01$) were noted (de Vaus, 1996:296-297). Intra-dimensional correlations were ignored. In total, 39 items were revealed in the resultant matrix. In one case, an item was a question repeated in a different form to test respondent consistency; in this case there should have been a correlation – and there was. In another instance, two correlations were meaningless. Ultimately however, 36 results (92%) are rationally explicable in terms of the literature and management practice. The correlations and their implications are discussed below. The first two numbers in parentheses are the items numbered as in the research instrument, and the last number is the correlation coefficient.

1. *View of future business and environment; dependent community [1.3;4.7; $r = 0.63$]*

Included in management's view of the future business and environment, is developing an online community dependent on the firm. This is customer lock-in (Amit & Zott, 2001; Hax & Wilde, 2001a).

2. *Investors expectations; motivating vision [1.4;11.1; $r = 0.62$]*

The high correlation emphasises the value of the contribution of investor expectations to the central harmonious theme which undergirds behaviour.

3. *Organisational objectives; how innovation leads to further innovation [1.5;5.6; $r = 0.67$]*

Setting objectives is a characteristic of futurity (Andrews, 1980; Ansoff, 1968). Innovation is a central theme reflected in the objectives of successful networked economy firms (Chesbrough & Rosenbloom, 2000; Hamel, 2000).

4. *Organisational objectives; effective communications [1.5;8.3; $r = 0.68$]*

Effective channels of communication are a culture trait evident in the effective management of knowledge workers. Enshrining such principles in company objectives, ensures commitment (Skyrme, 2001).

5. *Organisational objectives; motivating vision [1.5;11.1; $r = 0.62$]*

Harmony results from the presence of an effective, central theme. For harmony to exist, there must be alignment in strategies and, by implication, objectives. Question 1.5 examines whether organisational objectives are reflected throughout the organisation. Question 11.1 probes whether the vision of the founder / investor / managing director motivates the entire organisation, meaning permeated throughout the business. The positive correlation observed, implies that there is a relationship between the two items for this group of respondents. In the traditional objective-setting process, it can be argued that an effective vision is one that is communicated throughout the organisation. This observation is also now evidenced in some of the respondents to this survey.

6. *Organisational objectives; commitment to IT [1.5;11.5; $r = 0.73$]*

Business objectives cannot exclude information technology and *vice versa*. This is a basic tenet of the alignment of information technology with business objectives (Chatterjee & Segars, 2002; Norton, 2002; Ragu-Nathan, *et al.*, 2001).

7. *Strategic thinking; innovation leads to further innovation [1.6;5.6; $r = 0.61$]*

Question 1.6 establishes how strategic thinking has contributed to performance. The other question (5.6) relates to how innovation feeds on itself. The need for innovation permeates the successful organisation. The positive correlation implies that there is a relationship between strategic thinking and perpetuating the innovative cycle (Gopalakrishnan, 2000; Hamel, 2000).

8. *Strategic thinking; commitment to IT [1.6;11.5; $r = 0.62$]*

The correlation observed between these items again reflects the importance of including IT as a key element in management's strategic thinking.

9. *The existence of a current strategic plan; innovative ideas [1.9;9.3; $r = 0.66$]*

A written plan is the output of a formal strategic process. In this study it is correlated with the commitment to innovation. Formal strategy process and innovative thinking are closely linked in this group of online firms.

10. Dominant market position; dependent community [3.2;4.7; $r = 0.75$]

A strong market position is leveraged by a dependent community of online customers. Again the underlying principle is that of customer lock-in.

11. Identify opportunities; business model reinvention impact on profitability [4.1;5.4; $r = 0.61$]

Regular revision of the business model is required in order to exploit opportunities that arise. Opportunities and business model revision are significantly related (Amit & Zott, 2001; Chaffey, 2002; Kanter, 2001b).

12. Identify opportunities; innovative ideas [4.1;9.3; $r = 0.70$]

Market opportunities begin with innovative ideas nurtured in a culture of innovation (Hamel, 2000; Hamel & Prahalad, 1996a). One of the important recurrent themes in the study is the importance of innovation and the development and sustenance of a culture of innovation. Staff creativity is the source of new ideas (Hamel, 2000)

13. Identify opportunities; Staff creativity [4.1;9.6; $r = 0.64$]

Question 4.1 related to identifying opportunities in the market missed by others, and question 9.6 related to stimulating their employees' creative thinking processes. The possible logic linking these items is the mutual need for innovative thinking.

14. Online brand impact; Business model reinvention [4.5;5.4; $r = 0.69$]

Question 4.5 asked whether a strong online brand contributed to profitability, and question 5.4 was concerned with whether reinventing the business model had a positive effect on profitability. A possible link between the two items is profitability (Amit & Zott, 2001; Brynjolfsson & Smith, 1999).

15. Customer feedback; innovation leads to further innovation [4.6;5.6; $r = 0.66$]

Listening to customers provides ideas for ongoing innovation (Hamel, 2000).

16. Customer feedback; innovative ideas [4.6;9.3; $r = 0.67$]

Question 9.3 was concerned not so much about innovation as its impact on the success of the business. There is a significant relationship between listening to customers and generating innovative ideas that contribute measurably to the success of a business.

This is a frequent theme of the writers on innovation (Chandler, Keller & Lyon, 2000; Choi & Valikangas, 2001; Hamel, 2000; Ittner & Larcker, 1998).

17. Customer feedback; motivating vision [4.6;11.1; r = 0.65]

The more the business model is tuned by customer feedback, the more the vision guides the business. Dynamic pliancy is a winning characteristic of networked economy firms. Being receptive and agile as new feedback is received, and changing accordingly, sends positive signals into the organisation which reinforces the central theme.

18. Continuous reinvention; innovative ideas [5.3;9.3; r = 0.61]

Innovative ideas foster a culture of continuous reinvention. The innovative process must be ongoing (Hamel, 2000).

19. Innovation leads to further innovation; legacy systems [5.6;7.10; r = 0.65]

Legacy information technology systems are an inheritance of the past. Frequently these legacy systems comprise outdated computer systems, which for investment or high cost of replacement reasons, the organisation is obliged to keep. The correlation between these items reflects the innovative ways these legacy systems have been kept from being redundant, and continue to make a positive contribution to profitability. There are many such examples of this situation amongst the larger financial institutions.

20. Innovation leads to further innovation; staff creativity [5.6;9.6; r = 0.61]

Innovative culture is correlated with staff creativity. The common thread is possibly the presence of an organisation culture stimulating creativity and resulting in innovative products and processes (Hamel, 2000).

21. Fast deployment; innovative ideas [7.5;9.3; r = 0.69]

Rapid deployment of technology pre-empts competitors. This is related to innovation and contributes to profitability. This is the product of an innovative culture and dynamic capability (Eisenhardt & Martin, 2000; Lawson & Sampson, 2001; Sambamurthy, *et al.*, 2003).

22. *Fast deployment; flexibility investment [7.5;12.1; $r = 0.69$]*

Question 7.5 relates to expanding the technological capabilities faster than the competition; and question 12.1 relates to investment in flexibility. The common area linking the two items may be the need to establish and maintain a dynamic capability, thus ensuring organisational agility (Eisenhardt & Martin, 2000; Teece, *et al.*, 1997).

23. *Quick IT implementation; formal knowledge management system [7.6;8.1; $r = 0.65$]*

Question 7.6 related to the speed with which technology decisions are made; question 8.1 related to the existence of a formal and centralised process for managing knowledge-based material. The common area may be that better, general and not only technological decision-making is possible in the presence of formal knowledge management systems.

24. *Quick IT implementation; effective communications [7.6;8.3; $r = 0.67$]*

The common thread between these two items may be the need for swiftness of reaction. Effective communications enable faster information technology decisions to be made.

25. *Quick IT implementation; flexibility investment [7.6;12.1; $r = 0.66$]*

Question 7.6 relates to the speed of technology implementation; question 12.1 related to investment in business flexibility. Another attribute of dynamic pliancy is the decision to invest resources in business flexibility, thus facilitating rapid information technology decision-making to the benefit of the business (Hamel & Valikangas, 2003; Linder & Cantrell, 2000). The common factor is investment in ensuring speedy action.

26. *Adequate management information system(MIS); knowledge management [7.8;8.1; $r = 0.65$]*

This item was aimed at determining whether the MIS meets the need of management. It is significantly correlated with the existence of a knowledge management system. The commonality could be related to respondents who consider the business MIS as one source of knowledge (Skyrme, 2000).

27. *Aggressive investment in IT; flexibility investment [7.9;12.1; $r = 0.69$]*

This dimension is concerned with whether, relative to other resources, the business aggressively invests capital in information technologies. This is significantly correlated with investing capital to ensure that the business remains flexible. This correlation reinforces the internal consistency of the instrument.

28. *Aggressive investment in IT; pilot studies [7.9;12.2; $r = 0.61$]*

Pilot studies are a way of containing risk while evaluating new opportunities. The implication here is that the business undertakes pilot studies in the IT area prior to making substantive investments.

29. *Effective communications; motivating vision [8.3;11.1; $r = 0.68$]*

This finding is not unexpected. For a vision to be effective, especially in the context of networked economy firms, the vision should permeate the entire organisation. This would not be possible without a culture of effective communications.

30. *Effective communications; vision keeps objectives of divisions closely aligned [8.3;11.4; $r = 0.60$]*

Effective communications enable the vision to align the various divisions within the organisation. This is an important attribute of the harmony dimension.

31. *Contribution of innovation ideas; management commitment to IT [9.3;11.5; $r = 0.67$]*

Question 9.3 tested the contribution of innovative ideas to the success of the business; question 11.5 related to the importance of executive management's commitment to the successful performance of the information technology function. Poor performance of IS implementation has been linked to the lack of management commitment (Corbitt, 2000). Management commitment to IT may also foster innovation. The common factor linking these two items could be the interest of management in IT and in nurturing an innovative climate.

32. *Innovation institutionalised in job description; directional flexibility [9.2;12.5; $r = 0.74$]*

Having innovation institutionalised, for example, contained in the job description of every employee, would support business flexibility. Its commitment to dynamic pliancy may encourage support for effective performance.

33. *Innovative ideas; commitment to IT [9.3;11.5; $r = 0.67$]*

Innovative ideas that contribute measurably to the success of the business are significantly correlated with executive management's commitment to the successful performance of the information technology function. Again this emphasises the potential innovation contribution from the IT function.

34. *Innovative ideas; flexibility investment [9.3,12.1; $r = 0.64$]*

Innovative ideas contribute measurably to the success of the business. This factor is correlated with investing money in keeping the business flexible. Flexibility is an inherent element of innovation.

35. *Measure innovation output; pilot studies [9.4;12.2; $r = 0.68$]*

One measure of innovation is the number of pilot studies undertaken, and can explain the significant correlation between the two items.

36. *Management commitment to IT; Directional flexibility [11.5; 12.5; $r = 0.68$]*

These items relate to the attitude of executive management's commitment to the successful performance of the information technology function and the ability of the business to change direction with minimal disruption. The common factor here is management's commitment and belief in the IT function that it is sufficiently agile to accommodate rapid changes in business direction.

8.15 IN SUMMARY

The chapter began with the demographic analysis of the data. In total, 192 websites were identified as the population. In total, 144 businesses were contacted personally. A total of 69 responses were received from respondents at management level and upwards. Most firms were online ventures of offline businesses. The largest firms with annual turnover exceeding R20 million per annum, accounted for 18% of the respondents. A total of 26% of respondents reported an annual turnover between R2 million and R20 million, and 56% of the population comprised the smaller firms whose turnover is less than R2million. Of the total, 35% of the respondents were trading prior to March 2000. In the year to March 2003, only 8% of ventures were initiated. A marked recovery in confidence was shown by 13% of respondents reporting that they started to trade in the twelve months to March 2004.

The limiting factor in the usable population data was the performance construct. Due to the reluctance on the part of respondents to supply performance data, the best case scenario in the trade-off between the number of usable performance items and the number of cases, permitted four measures of performance to be used and gave 39 usable cases of good data used in the later analysis. The data were examined for reliability as measured by the Cronbach's coefficient α . With the exception of the interjacency dimension, the instrument delivered α coefficients indicating sufficient reliability. After motivating the removal of this dimension from the data set, regression models were developed for each dimension. This produced two break-points, one at three dimensions, and one at six, where the differences in the slope changed. The regression summary for the three dimension case showed as significant customer centricity, digital spontaneity and dynamic pliancy, with digital spontaneity being negatively correlated. This apparent anomaly was discussed in terms of the respondents who may have outsourced their e-commerce processes, leaving the spontaneity and scalability of IT systems to their service provider. The classification and regression trees analysis highlighted the significance of dynamic pliancy and customer centricity in explaining performance.

The strategic architecture/performance relationship was explored by means of regression models. The findings in every case confirmed a significant positive correlation between strategic architecture and performance, thus achieving the stated primary research objective.

It was necessary to explore strategic architecture differences between pure online firms and hybrids. An analysis of variance test found differences in customer centricity, economic innovativeness, knowledge management and harmony. The chapter concluded with the findings and their relevance, application, recommendations, and implications for managers. The next chapter of this dissertation provides a final, concluding overview.

CHAPTER 9

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

9.1 THE STUDY - IN SUMMARY

The 21st century introduced turbulence and change on a scale not previously imagined. Drivers such as instant customer gratification, dynamism, choice and the shifted locus of power that elevated buyer sovereignty to new heights, have impacted on every organisation, commercial or otherwise. The networked economy demands a review of almost every productive activity. Networks, communications and media are converging with information technology to create new challenges for managers.

Certain basic structures remain unchanged. The centuries-old tenet of a business endures. Independent of its surrounds, business remains a commercial endeavour driven by shareholder wealth, deploying people and resources to generate profits through sustained competitive advantage. The realm of business, though, is not immune to change. The internet, the web and the associated economic challenges make new demands on management, which in turn produce offerings with lasting effects on people and communities, whether they be employees, consumers or ordinary citizens. Management's battles begin in the arena of strategy.

Strategic management is an active field of academic research. Its legitimacy is evidenced by the myriads of studies in the literature that comment on the link between effective strategy and related business performance. The early works, which started in the mid-1900s, were conducted in environments vastly different from that of today. Stability, tradition and certainty characterised the business domain of the time. The networked economy requires a different strategic mind-set. Such change is no trivial exercise. Even in the light of today's environmental developments, there remain certain authorities and managers who cling to the legacy of the past. They are ignorant of the danger that exists when their ideas are taught or passed on, of their apprentices assuming that it is still the gospel of today. This problem illustrates just one difficulty faced by practitioners and academics when having to come to grips with how to generate profits now and in the future.

The first lessons for naive management and rash investors were learnt from the collapse of the dot.coms, and the subsequent loss of billions of dollars. After some self-examination, a lot of humility, and quite some research, concerns began to be raised regarding the way business “happened” in those times. Eventually, the quality and composition of the strategies employed began to be questioned. There had to be a way to understand this economy and find the rules for success that could lead to improved business performance. Making a useful contribution to this specific field of knowledge, is the fundamental *raison d’être* of this dissertation.

The literature study began by tracing the roots of traditional strategy, and then locating it in the light of developments within the networked economy. It dealt with confusion amongst academics and strategy researchers regarding the process and content of strategy in this new environment. The study slowly began to provide some clues to effective strategic behaviour for commercial ventures.

A departure from the need to simply find more or different strategy items occurred during the literature study of business models. The concept of value with roots going back to the turn of the previous century, was encountered. A framework for the first research construct, termed strategic architecture, began to be postulated. Positioned as more fundamental than either a strategy or strategy-set, strategic architecture was put forward as a fundamental business philosophy predicating success in the networked economy. Further study revealed the source of additional components that were subsequently incorporated into the construct to improve its robustness. A second construct, business performance, based largely on research in the field of strategic management and entrepreneurial studies, was formulated, thus setting the stage for the testing of the research hypothesis.

The empirical phase of the study began by identifying the population universe and finding suitable items. Since the aim of the study was to explore the variance in performance of networked economy firms, the assumption was made that its pioneers are most likely to be the so-called “e-” business ventures. Examining such firms would reveal patterns of behaviour that would have general application before the internet becomes ubiquitous and early adopter competitive advantages dissipate. A subset of such firms, e-commerce businesses, sell directly to the consumer using the web and its related technologies as their communications and

transactional medium. The scope of the study was defined to include all such firms located in South Africa.

The study findings confirm a positive relationship between strategic architecture and performance. The statistical analysis identified customer centricity, dynamic pliancy and to a lesser extent, market exploitability as the three most important dimensions. Further statistical tests showed that pure-play firms have slightly different architectural compositions from those businesses that began as offline ventures. Regressions reveal many secondary implications for management. These findings appear consistent with the research problem.

9.1.1 Research problem

The capital lost during the collapse of the dot.com ventures came mostly from the failure of internet start-ups. There existed a predisposition among these e-entrepreneurs to regard the traditional process and content of business strategy as *passé*. Another proposition to which they gave credence was the belief that a business model would guarantee their longevity. In the evolving networked economy, both perspectives were found wanting. Although both were important, standing alone neither was sufficient.

This study was initiated because of a belief that an effective plan for a venture is conducive to improved performance. This was the case for most of the previous century, when a well-crafted business strategy delivered successful advantage. The subjects of the study are evolving businesses that are already coping with the challenges of the networked economy. The specific problem being researched is the relationship between the behaviour and success of networked economy firms, and the identification of the important contributing factors. The first two chapters of this document introduced the research design, discussed the problem and its rationale, and introduced some technical concepts to form the background to the literature study.

9.1.2 Literature study

The literature study began in chapter three, with the field of strategy research that for many years has been the focus of management research. Beginning with management's endeavours to attain a desired future for their businesses, strategy research encompasses typological approaches from which it derives associated behaviour. Pre-internet studies showed how firms

adopt different strategic behaviours at different stages of their life-cycle. Growth businesses capitalised on high levels of product breadth, quality and vertical integration. The strategy theme included two predominant perspectives. The positioning-based view seeks to optimise the fit between the firm and its environment. The resource-based view approaches the firm as a collection of resources capable of being deployed to create value.

At that point it became apparent that strategy was insufficient to account for all the variance in performance of today's internet businesses. A more pervasive approach was called for. It appeared that the classic approach to strategy formulation with its perceived indifference, for example, towards network formation, confusion around generic strategy deployment, lack of dynamism and its possibly superficial treatment of customer-centricity, contributed to electronic business practitioners arriving at their flawed conclusions about the value of a business model as an alternative pathway to success.

The literature study of business models explored the link with strategy in order to formulate and extend the research construct. Beginning with an assessment of market characteristics, it argued that the driving forces in the economy introduced fundamental changes demanding different responses from e-business firms in their quest for competitive advantage. Electronic markets were found to exhibit characteristics that set them apart from conventional ones. Understanding these differences is necessary for analysing the impact of business models. These markets are still evolving. Their characteristics include being frictionless, having low search costs, strong price competition and low margins.

9.1.3 Construct development

Business models were found to have their origins and purpose around the creation of value. Value from cost savings, industry innovation and disintermediation are some of the contributions this field made to the formulation of the first research construct, strategic architecture for commercial web-enabled enterprises. Its dimensions initially were sourced from strategic intent and value creation. There still appeared to be insufficient grounds for explaining the variation in performance. The study continued by motivating the inclusion of additional dimensions, characteristic of networked economy firms, from literature sources covering the academic fields of knowledge management, dynamic capability and harmony.

The research design embraced business performance as the dependent variable. The literature on performance included research in the entrepreneurial field, since much of the population would contain newly-formed business ventures. Business performance was defined as a subset of organisational effectiveness. A second research construct, performance of commercial web-enabled enterprises, was formulated. Its requisite dimensions and measures incorporated new metrics applied in practice by the electronic business industry. Traditional measures of performance were also examined for their selected inclusion in the framework.

Performance is described by dimensions of efficiency, productivity, growth, profit and market share. The defined control variables included whether the respondent's business was a pure-online venture, a hybrid, or an online business that subsequently established an offline channel, the type of business model, the annual turnover, total employees and online trading period. Value creation in networked economy firms is dependent on marketing, growth, customer acquisition, growth in customers and conversion rates. Traditional, financial measures were reviewed for their suitability. It was argued however that such measures tend to be retrospective in nature, do not provide adequate treatment of intangibles, non-financial performance or business flexibility. Only measures of return on investment and profitability were selected as appropriate for inclusion. The linkage between architecture and performance was further investigated in the empirical work.

9.1.4 Empirical study

An instrument with a six-point Likert scale, including an additional "statement not relevant" option, was formulated. The content and structure of a preliminary version was purified by local and international expert and academic opinion. Their feedback was incorporated into the final questionnaire. The survey was hosted on the web. Certain criteria were incorporated into the programming which prevented duplicate submissions from being posted. No individual submission could be made until all questions had been answered.

The study population comprised the universe of South African web-enabled firms, and public domain sources were deployed in the search for respondent businesses. In accordance with academic practice, rules for membership were established. These rules included the need for a respondent to have an active web presence, show evidence of online trading, have an appropriately secure website and comply with South African e-commerce legislation. Each candi-

date was examined for compliance with the rules and a contact person identified. Once all the respondent details were known, each person was contacted by telephone, informed of the study and invited to participate. Every selected respondent was then provided with a unique, random, computer-generated password for access to the site. Each received their password in a personal email. As a further motivating factor, each one was offered a view of the aggregated responses. Once sufficient responses had been received, this was programmed to occur automatically once the respondent clicked on the "Submit response" button. The only aggregated data available to view was that relating to strategic architecture. The demographic and performance data were not visible. This was done to prevent unauthorised interpretation or use of the findings of this study.

The instrument was administered to a pilot group of a randomly selected 10% of the population. The rest of the population were contacted personally and invited to participate. The results were analysed using multivariate exploratory statistical techniques and correlations between the dimensions determined.

9.1.5 Statistical analysis

In total 144 businesses were contacted with a response rate of 35.9%. More than 80% of respondents were from the management level upwards. Most firms were online ventures of off-line businesses, and almost all respondents indicated their business type as an e-shop. The largest firms, whose turnover exceeded R20 million per annum, were the airlines, cinemas, banks and the larger home-shopping e-tailers, which accounted for 18% of the respondents while 26% of the respondents reported a turnover of between R2 million and R20 million. These were the online book stores, technology purveyors, gift sellers, online advertisers and financial services suppliers. The largest group of respondents by number, more than half of the respondent sample, were the smaller firms with a turnover of less than R2 million. They are the specialist online retailers selling wines, art, music and selected books. More than a third of the respondents were trading before March 2000. After a decline in the establishment of new ventures in the intervening years coinciding with the dot.com losses, a marked recovery in confidence became evident from the 13% of respondents, who reported beginning online trading in the 12 months to March 2004.

The size of the initial data-set (69 responses) for the statistical analysis was made smaller because of the number of “Statement not relevant” responses received in the performance section of the questionnaire. There appeared to be a reluctance, or inability on the part of respondents to supply the requisite performance data. An analysis of the trade-off between the maximum number of measures of performance and usable cases framed the study data and provided 39 cases for analysis. After testing for internal consistency with Cronbach’s coefficient α , the dimension of interjacency and three further unrelated items were rejected. Regression models with performance were developed for the remaining dimensions. The analysis produced two cases with one considering three dimensions, and another considering six dimensions. The regression summary for the six dimension case indicated that the dimensions of customer centricity, digital spontaneity, knowledge management and dynamic pliancy were relevant. The most significant dimensions, those with the lowest p values, were customer centricity and dynamic pliancy. When narrowed down to the three dimension case the dimensions of customer centricity, dynamic pliancy and digital spontaneity (negatively) accounted for 44% of the variance in performance and affirmed those dimensions as the most significant.

9.2 CONCLUSIONS

9.2.1 The research questions in the light of the findings

The primary research objective of this study was to provide a feasible explanation for the variance in performance of commercial web-enabled firms. The study proposed to investigate by what strategic means, e-commerce firms in the networked economy can improve their performance. Several secondary objectives were also identified. These were to develop literature-based conceptual constructs for strategic architecture and business performance. These constructs were to become the basis for an appropriate measuring instrument suitable for being administered to the strategy formulators, or their equivalents, in electronic commerce businesses in South Africa.

The instrument should provide an indication of this relationship. The individual factors contributing to successful performance should be identified, as well as the concomitant management implications and recommendations. The strategy, its characteristics and its application to firms in the networked economy is an emerging field of academic study. The study should indicate areas for further research.

The linkage between strategic architecture and performance was examined by means of regression models. The findings confirmed that there is a statistically significant positive correlation between strategic architecture and performance, thus confirming the primary research hypothesis. In the analysis of the empirical study, the classification and regression tree analysis identified the significant dimensions explaining performance. In order of priority, these “success factors” are:

1. Dynamic pliancy; and
2. Customer centricity.

The factors of Dynamic pliancy; and Customer centricity raise the question whether businesses with low scores in these attributes could be successful. Certainly, as has been pointed out before, the e-commerce literature is very strongly supportive of customer centricity as a prerequisite for success. In not one text is this factor not strongly endorsed. Indeed, the technologies available to web-enabled firms have simplified customer centricity to a degree considered almost impossible in an earlier, paper-based economy. Dynamic pliancy, shown in this study to be the most important attribute, is also well-endorsed as a success factor in the texts. It is not as narrowly defined as customer centricity but is seen to be a key characteristic of management’s success in coping with turbulence, change and the other networked economic drivers. Purely on the basis of this study however, such direct conclusions should be tempered with caution.

The secondary research question, identifying the significant contributing elements of strategic architecture, has thus been addressed.

An adjunct to the study was to determine whether there was a difference in the strategic architecture of pure online firms and hybrids. The statistical analysis showed that the differences between several dimensions were significant. Strategic architecture of pure and hybrid firms seem to be similar with regard to the dimensions of Futurity, Macro-economic positioning and Equivocality. There is a difference in the strategic architecture of online firms and hybrids.

9.2.2 Management conclusions

An examination of the item covariance matrix revealed further findings, and permitted interpretation in terms of their value to management. The matrix revealed 36 results, most of

which were rationally explicable in terms of theory and/or best practice. The correlations generally confirmed the findings of other studies in the literature. Certain concepts such as the need for customer lock-in, the value and importance of a central, uniting, vision and the need for management to strive for a desired future, were observed.

Findings such as the importance of effective communications, the alignment between business objectives and information technology, and the key role of innovation were also observed. Innovation should be integrated into the organisation's objective-setting process, and the documented strategic plan should reflect this commitment. The strategy formulation process should be linked to innovative thinking. An innovative climate fosters further innovation. Innovation requires metrics and one way of measuring effectiveness is by the number of pilot studies undertaken. Having innovation institutionalised in the job description of every employee promotes flexibility. Innovative ideas contribute measurably to the success of the business and are correlated with conscious investment to ensure business flexibility.

Innovation also has a key role in marketing and information technology. Market opportunities begin with innovative ideas nurtured in a culture of innovation. Innovative thinking by employees assists in identifying market opportunities. Customers' feedback is also correlated with innovation. Legacy information technology systems require innovative ways for keeping the business IT systems from becoming redundant. The rapid deployment of technology is promoted by a culture of innovation.

The importance to the firm of having a dominant market share and dependent community was revealed. Also of importance is the need for an appropriate business model and online branding. Networked economy ventures are passionately customer centric. This was emphasised by the correlation between customer feedback, innovation and corporate vision.

Effective management information is the forerunner of formal knowledge management systems. There is a strong link between executive management's commitment to the successful performance of the information technology function and innovation, enabling the business to rapidly change direction without disruption as it responds to developments or opportunities in its environment.

Dynamic pliancy, however, remains the winning characteristic of networked economy firms. They are receptive, agile and readily listen to their customers. Rapid technology deployment pre-empts competition and is related to innovation and contributes to profitability. Investing in flexibility facilitates information technology decision-making. Rapid IT implementation combines with formal knowledge management systems to support responsive decision-making. Dynamism flourishes in the presence of effective communications. Relative to other resources, successful businesses aggressively invest capital in information technologies. To sum up, the philosophy of winning is a strategic architecture that creates an instinctive agility with a pervasive customer centricity.

9.3 RECOMMENDATIONS

9.3.1 Strategic architecture

The roots of strategic architecture are value creation and strategic intent. It exists at a fundamental level in a business and is the foundation for strategy. Strategic architecture predicates the performance of networked economy firms. This management philosophy reflects their attitude and behaviour as they pursue sustainable competitive advantage. As a philosophy of strategic intent and value creation, it is the fundamental basis for a value proposition and provides a reasoned judgement of performance. It is not a new strategy-set since its dimensions are intra-functional. Just as a building plan is rooted in an architectural concept, so a business strategy is founded on a strategic architecture.

This study shows that if management creates an effective strategic architecture for their business, the performance of their business could be more successful. Some guidelines for an effective strategic architecture for commercial web-enabled enterprises follow.

1. Strategic architecture is a pervasive philosophy. There is no one person or manager who “owns” it. The study shows that there are some differences in strategic architecture between pure online and hybrid businesses.
2. The elements of strategic architecture should be taken into account as the functional business plans are formulated. For example, harmony implies alignment. The marketing, operations, technology, finance and human resources plans should be in line and in agreement with the overall objectives of the business. Customer-centricity ap-

plies in every customer-facing situation, be it face-to-face, through a website or customer relationship management system.

3. It has been argued that strategic architecture is the reasoned basis for the success of an online venture. When problems occur, this map should be the first point of reference for problem diagnosis.

There are several valuable dimensions within strategic architecture. The following section summarises the recommendations based on the most important dimensions.

9.3.2 Customer-centred dynamism

The two most important dimensions revealed in this study are customer centricity and dynamic pliancy. These positively-correlated and significant dimensions of strategic architecture form the basis for some of the recommendations for management which are discussed in this section.

Dynamic pliancy is the result of a dynamic capability of the firm, and when effectively deployed, enables the business to become pliant in adapting to the demands of the market, technology or competitor. Pliancy results from adaptability as a business is altered or modified to fit environmental conditions. Successful networked economy firms have high dynamic pliancy scores. There were five attributes measured in this study. Each one has recommendations for management.

1. **Maintain flexibility:** Flexibility does not happen by accident. Respondents indicated that capital was allocated to creating and maintaining this attribute in their business. Like strategic architecture, this attribute is not a characteristic of one functional area, but should form the basis of how the entire business responds to stimuli. Since e-commerce businesses are still evolving in the turbulent networked economy, the importance of this attribute may be tempered in time.
2. **Cautious responsiveness:** The successful venture responds cautiously. Respondents indicated making use of pilot studies to test risky ideas or ventures.

3. **Maintain staff flexibility:** Respondents reported that their staff were generally multi-skilled people. This trait again reflects the way some companies achieve their dynamic capability. In the empirical study, 71% of respondents either “mostly agreed” or “totally agreed” that their staff were multi-skilled.
4. **Instil routines:** The existence of standard routines, practices and procedures characterise firms with a dynamic capability. Routine practices enable swift, measured responses to market and business opportunities.
5. **Ensure adaptability:** This attribute is characteristic of agility. An effective performance is related to the ability of a business to change direction with minimal disruption.

Customer centricity was defined as the firm’s attitude towards customers, its richness and reach, its ability to raise switching costs and create customer lock-in. This dimension was sourced from the study of business models, which *inter alia* found the customer proposition to be an important contributor to value creation. There are several recommendations for management from this aspect of the study.

1. **Make customers feel special:** The question measured the respondent’s belief of whether their customers would feel that the business makes them “feel special”. Almost 60% of the respondents “mostly agreed” with this question. Successful performance is supported firstly by management measuring customer attitudes, and secondly working at creating a “special feeling” amongst their customers
2. **Ensure web security:** Purchaser security has always been an inhibitor of e-commerce adoption. The presence of secure protocols, digital and trust certificates improve customer confidence.
3. **Bolster after-sales service:** For most customers, after-sales service is the reason they buy on the web (refer to Section 3.9.3). This finding is as important for online firms as it has been for offline businesses.
4. **Use metrics:** Many respondents labelled this question “statement not relevant”. The literature study has shown the importance of measures. It is recommended that any

form of measurement, especially in these early phases of evolution, is better than nothing.

5. Nurture your customers: The recommendation here is that, with customer lock-in, a business is more readily able to get business from existing customers than from new customers. Managing the relationship is important.
6. Manage customer relationships: Almost 60% of respondents believed that their CRM made a positive contribution to sales. Customer relationship management is too important to leave to computerised CRM systems. The customer relationship is a key factor in success.
7. Become a resource for customers: Customer lock-in is a characteristic of customer centricity. It involves building a community of consumers and adding value to the website by becoming an invaluable resource. Almost 50% of respondents “strongly agreed” with the proposition that serving as a customer resource for them has made their website “more a resource ... than a sales channel.”

9.3.3 Additional recommendations

The inter-item correlation analysis in Section 8.14 generated implications for management and provided a source of additional recommendations.

1. Strive for harmony: Harmony is the output of alignment that is created by a central vision uniting the business and directing the activities of management and staff. Almost three quarters of the respondents mostly or totally agreed that such a vision “motivates the entire organisation”. The founder / investor / managing director owns the vision. It is his/her responsibility to create and support the vision.
2. Believe in a desired future: Futurity is about the strategic intent of management. Critical as strategic management is for a traditional firm, it is as important for a web-enabled venture.

3. Make effective communications part of the culture: Alignment, harmony and knowledge management thrive in a climate of healthy communications.
4. Innovation everywhere: Create a culture of innovation. Beginning with the strategic plan, include innovation in all aspects of objective-setting. Use metrics for assessing performance and progress. Utilise pilot studies to minimise risk. Institutionalise innovation by including it in the job description of every employee. Promote flexibility through innovative ideas. Look for innovative ideas for exploiting market opportunities.
5. Innovate in IT: Innovation and IT are almost synonymous. Find innovative ways of using legacy information technology systems. Use innovation to prevent IT systems from becoming redundant. Use innovation to rapidly deploy technology and support agility.
6. Market share: The value of a dominant market share, as in the case of traditional firms, cannot be overlooked.
7. Make the business model appropriate: The importance of an effective business model, based on customer requirements, cannot be over-emphasised. In line with evolving customer trends, web technologies and economic drivers, the business model should be a dynamic creation and not cast in stone. More than 40% of the respondents reported that re-inventing their business model has had “a positive effect on profitability”.
8. Establish effective management information systems (MIS): The MIS is an important element of a knowledge management system. The responses indicated that there was still some way to go in getting the MIS to meet their needs.
9. Become dynamically pliant: Such firms are receptive, agile and readily listen to their customers. They have technologies that can be rapidly deployed and in so doing preempt their competition. Dynamism is related to innovation and contributes to profitability. Flexibility facilitates information technology implementation.

9.4 RECOMMENDATIONS FOR FURTHER STUDY

One tacit purpose of this study was to bridge the gap often encountered in practice between the domains of information technology and business management. The findings have demonstrated that success in the networked economy requires this relationship to be intimate and symbiotic to be effective. The IT research artefact, which researchers by their own admission agree has eluded academia for half a century, is no more than the leverage of technology for better business performance – a worthwhile research endeavour in the light of the findings of this study.

Secondly, the constructs and instrument may be further refined in the light of the determinants of internal consistency. The study pointed to a return to confidence of web-enabled businesses. This field could grow rapidly. This study could be repeated over time and longitudinal effects explored. The scope of the study could be extended to include more B2B companies. It is difficult to find them, but since this is the fastest growth area of all internet-enabled companies, most “bricks and mortar” companies may soon be using online networking. Simply studying these hybrids could reveal lessons from how they are coping with the challenges of the networked economy.

Thirdly, there is a difference in strategy formulated by pure online firms and hybrids. There may be “contamination” of the strategy of hybrids from the traditions of the parent company. This may stunt innovation and integration, keeping firms from achieving the maturity which is a necessary condition for global competitiveness. This is a potentially valuable area for further study.

The large proportion of respondent firms that have only been trading for a short time had negative consequences for the performance construct. With time, especially in view of the return to confidence of web-enabled enterprises, the population of suitable firms may grow rapidly. Repeating the study in a few years time with a larger group of respondents, could improve the confidence of these findings and possibly highlight new developments. The application of advanced statistical modelling techniques may then be more appropriate.

Finally, this work has been confined to e-commerce companies, who, it may be argued, are the early adopters of strategy in the networked economy. Do offline companies still practise

traditional strategy? If so, how effective is it in explaining their performance in the networked economy? When the “e-” in e-business falls away, as it probably will once the competitive advantages offered by the internet and its technologies disappear, how will the strategy set of the successful firms change. How many of the dimensions of strategic architecture will still be relevant?

There are a few pointers for future studies: Usable data was limited by poor response to the section in the questionnaire on performance. Beware of asking for trends where the respondents have not been trading for at least twice the period required in the questionnaire. It may be prudent, further to use smaller intervals, for example 10%, instead of the 25% intervals used. The number of performance items may also be reduced without losing information.

The study is concluded by showing management and investors, especially those challenged by the “new” economy, that *“If you think before you do, what you do will be better – and here are a few things to think about ...”*

“Are there any great challenges left [in research]?” “Absolutely. ... The way to do great science is to stay away from subjects that are overpopulated, and go to the frontiers.” James Watson, DNA pioneer. Time magazine. 3 March 2003.

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APPENDICES

APPENDIX A
RESPONDENT DATA

The respondent data are presented in the tables below.

	Bricks	Pure	Offli	Model	T/O	Empl.	Life	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8
Resp1	1	Hybr	2	1	5	4	7	7	6	7	7	5	3	3	4
Resp2	2	Hybr	2	1	2	2	6	7	2	7	7	5	7	6	7
Resp3	1	Hybr	2	9	6	5	1	7	5	2	5	6	7	6	5
Resp4	1	Hybr	2	1	7	7	5	6	5	6	7	6	6	6	5
Resp5	1	Hybr	2	1	7	1	3	6	6	4	2	2	2	5	2
Resp6	1	Hybr	2	1	7	7	6	7	3	6		4	4		6
Resp7	1	Hybr	1	1	6	7	3	7	3	6	6	6	5	6	6
Resp8	2	Hybr	2	4	1	1	1	7		6	6	5	5	5	5
Resp9	1	Hybr	2	9	3	4	1	6	4	2		4	5		4
Resp10	1	Hybr	2	1	3	5	4	7	5	3	4	2	5	5	2
Resp11	2	Hybr	2	9	3	6	7	7	3	6	6	6	5	6	5
Resp12	2	Pure	1	1	7	7	7	7		6		6	7		7
Resp13	1	Hybr	2	1	7	7	4	7	3	6	6	7	7	6	7
Resp14	2	Pure	2	1	4	5	2	7	5	7	6	6	7	5	6
Resp15	1	Hybr	2	1	3	4	5	5	5	6		4	7		3
Resp16	1	Hybr	2	6	1	2	4	7	2	5	5	6	6	6	4
Resp17	1	Hybr	2	1	7	7	5	7					7		6
Resp18	1	Hybr	2	1	7	7	2	7	5	6	4	3	3	4	5
Resp19	1	Hybr	2	1	4	5	4	7	3	2	4	2	4	5	2
Resp20	2	Pure	1	1	5	6	4	7	2	7	5	7	7	5	5
Resp21	1	Hybr	2	1	7	7	7	6	7	6		7	7		6
Resp22	2	Pure	2	9	2	5	4	7	2	6	6	6	6	6	6
Resp23	2	Pure	1	1	7	7	7	4	3	6	5	5	5	5	5
Resp24	1	Hybr	2	1	5	7	4	6	2	7	6	6	7	6	7
Resp25	1	Hybr	2	9	1	1	7	7	3	6	6	6	6	6	6
Resp26	2	Pure	2	1	1	4	3	7	2	7	6	7	7	7	6
Resp27	2	Pure	1	1	7	7	7	7	5	6	6	7	7	7	7
Resp28	1	Pure	2	1	1	4	1	7	3	7	7	7	7	7	7
Resp29	1	Pure	2	1	7	6	3	6	5	6	6	6	6	6	6
Resp30	2	Pure	1	8	4	5	2	7	5	5	7	6	7	7	6
Resp31	1	Hybr	2	1	7	7	7	3	5	6	7	3	6	7	5
Resp32	2	Pure	1	1	7	7	7	6	7	5	7	7	5	7	7
Resp33	1	Hybr	2	1	6	5	3	7	5	6	7	5	5	6	4
Resp34	2	Pure	2	1	7	7	5	7	3	6	6	6	5	6	5
Resp35	2	Pure	1	1	3	6	3	6		6	6	5	4	4	4
Resp36	2	Pure	1	1	7	7	2	5	2	5			6		6
Resp37	1	Hybr	2	1	5	7	4	7				4	4		3
Resp38	2	Pure	2	1	7	7	7	6	4	3		6	5		6
Resp39	1	Pure	2	1	1	1	4	7	5	6	5	5	6	6	5
Resp40	1	Hybr	2	1	7	7	7	7	5	7	7	6	6	6	6
Resp41	1	Hybr	2	1	7	7	3	7	6	6	6	6	5	4	3
Resp42	1	Hybr	2	9	3	2	5	7	3	6	4	5	5		3
Resp43	1	Hybr	2	9	1	1	1	7	5	6	6	3	5	6	6
Resp44	2	Hybr	2	1	4	6	3	7	6	5		3	5		5
Resp45	1	Hybr	2	9	1	1	3	7	6	4	6	5	7	6	5
Resp46	1	Hybr	2	1	7	7	7	5	5	6	6	5	6	6	4
Resp47	1	Hybr	2	1	5	7	3	4	6	6		6			
Resp48	1	Pure	2	9	5	6	1	6	6	5	5	6		5	4
Resp49	1	Hybr	2	1	7	7	4	6	5	5			6		6
Resp50	1	Hybr	2	1	7	7	7	7	3	5		7	7		3
Resp51	1	Hybr	2	1	7	7	4	6	4	5			5		4
Resp52	1	Hybr	2	1	1	4	5	7	6	5	5	4	3	6	4
Resp53	2	Hybr	2	9	1	1	1	7	3	6	6	7	7	6	5
Resp54	2	Hybr	2	9	1	1	1	7	3	6	6	5	6	7	6
Resp55	2	Pure	2	1	7	7	7	6	6	3		5	6		3
Resp56	2	Pure	2	1	6	7	5	7	5	4	5	5	4	5	5
Resp57	1	Hybr	2	1	7	7	3	6	5	5	5	5	6	6	5
Resp58	1	Hybr	2	1	7	7	5	3	3	3	3	4	4	3	4
Resp59	1	Hybr	2	1	7	7	6	7	7	3	6	5	6	6	5
Resp60	2	Hybr	2	5	1	1	2	7	2	6	7	7	7	7	7
Resp61	2	Pure	2	1	7	7	3	7	7	5	7	6	5	7	7
Resp62	2	Pure	1	1	6	7	5	6	5	6	6	6	6	6	6
Resp63	1	Pure	2	1	7	7	1	6	2	6	6	6	7	7	7
Resp64	2	Pure	2	1	7	7	5	7	5	5			5		5
Resp65	2	Pure	2	1	7	7	7	7	5	5	7	6	7	7	2
Resp66	1	Hybr	2	9	1	3	4	6	3	6	7	7	7	7	5
Resp67	1	Hybr	2	1	6	7	4	6	6	3	6	6	5	6	3
Resp68	2	Pure	1	5	5	5	1	7	5			6	6		5
Resp69	2	Pure	2	1	7	7	4	6	6	5		6	7	7	6

	1.9	2.1	2.2	2.3	2.4	2.5	2.6	2.7	3.1	3.2	3.3	3.4	3.5	3.6	3.7
Resp1	3	5	3	5	3	6	5	4	3	5	5	2	6	5	4
Resp2	7	6	7	6		5	6	7	3	7	6	6	4	4	6
Resp3	7	6	7	6	5	7	7	5			6	2	6	6	6
Resp4	6	6	6	5	5	4	6	7	5	5	5	6	6	5	6
Resp5	3	5	6	5		3	5	6	6	2	6	6	5	6	6
Resp6	2	7	7	5		7	7	5	2	2	2	7	6	7	6
Resp7	2	6	5	3		6	7	5	6	7	6	7	6	5	7
Resp8	6	6		6		7	5					6	4	6	4
Resp9	6	6	3	3	3	5	6	6	3	7	6	5	5	6	7
Resp10	2	5	5					6	4	5	2	2		5	6
Resp11	3	6	5	5		6	6			5		5	6	5	4
Resp12	7		7	3							7	2	7	7	2
Resp13	7	6	7	5	5	6	4	6	2	7	2	3	6	5	7
Resp14	6	6	5	6	6	6	7	7	7	7	7	6	7	6	6
Resp15		6	7	5	4	6	7	7	3	5	4	4	4	6	7
Resp16	5	4	6	5	6	6	4	6	2	5	5	2	3	6	2
Resp17	5	6	7	5		5	5	5	2	7	6	5	7	7	4
Resp18	5	6	3	4	3	3	3	5	5	4	5	5	5	5	4
Resp19	2	5	4	4	3	6	3	7	2	6	6	3	6	6	2
Resp20	6	6	7	7	6	6	6	7	7	5	7	3	6	6	2
Resp21	6	7	5	5	6		7	7		5	5	5	6	6	6
Resp22	5	6	5	6	5	6	6	6	5	5	6	5	6	6	6
Resp23	4	5	5	3	6	5	4	7	4	3	6	6	3	5	2
Resp24	7	6	6	3		5	5	6	2	5	6	3	6	7	6
Resp25	6	3		3	2	3	3	2	2	6	2	2	2		2
Resp26	7	6	6	6	6	6	6	7	2	5	5	5	6	6	7
Resp27	7	7	6	7		6	6	7	5	7	7	7	6	6	6
Resp28	7	6	5	6	6	5	6	7	5	7	7	7	7	7	6
Resp29	5	5	6	5	7	6	6	6	2	6	6	6	6	6	5
Resp30	5	6	7	6	3	6	3	7	3	7	3	3		6	3
Resp31	3	6	6	6	4	3	6	5	3	2	3	2	6	6	2
Resp32	5	6	6	6	6	5	5	7	7	7	7	5	6	7	5
Resp33	7	6	5	5		7	6	7	2	5	7	7	7	7	7
Resp34	5	6	6	5	5	5	5	7	6	5	5	4	5	6	6
Resp35	3	7	3	6	5	6	5		2	6	3	3	4	6	7
Resp36		6	7	6		5	6	7	2	2	2	2	3	3	2
Resp37	4	5	2	4	4	6	7	6	2	3	4	6	7	7	4
Resp38	3	5	6	2		2	6	5	2	2	5	6	2		2
Resp39	5	5	7	6	6	5	7	7	2	6	7	2	7	6	6
Resp40	7	6	3	4	5	5	6	6	2	3	5	3	6	6	6
Resp41	3	7	5	6	4	7	7	7	4	6	4		5	6	7
Resp42	5	5		5		3	5	6	3			4	6	5	4
Resp43	3	5				4		6	2	6	5	2	6	6	6
Resp44	2	5		6		5	6		3	2	6	3	3	4	4
Resp45	5	6		5		5	6	7	4	5	6	4	6	7	6
Resp46	6	5	6	4	5	5	5	5	4	2	4	4	5	6	4
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Resp15	5	4	3	4	3	4	4	4	6
Resp16	4	5	3	5	5	5	4	5	5
Resp17	5	5	3		6	5	3		6
Resp18	3	2	3	6	3	2	5	6	6
Resp19	6	6	5	5	4	5	7	2	2
Resp20	6	4		2	6	7	6	7	7
Resp21	7	6	5	5	7	7	5	7	7
Resp22	6	4	2	5	7	6	5	7	7
Resp23	2	2	2	2	5	4	5	7	7
Resp24		5	3	5	6	4	4		
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Resp26	7	3	3	3	7	7	5	7	6
Resp27	7	6	2		7	7	2	7	7
Resp28	7	2	2	3	7	7	3	7	7
Resp29	6	6	6	5	6	6	5	6	6
Resp30	6	3	3	5	5	4	5	5	5
Resp31	3	3	5	5	6	6	5	6	7
Resp32	7	7	5	7	7	7	7	7	7
Resp33	5	4	5	6	6	4	5	6	6
Resp34	5	5	4	3	6	6	6	5	5
Resp35	3	3	2	2	6	3	2	6	5
Resp36	5	4			6	6	2	6	6
Resp37	5	3	4		4	6	4	6	6
Resp38	6	6	4	5	5	6	3	5	5
Resp39	5	4	5	6	6	6	5	6	7
Resp40	5	5	3	6	6	7	3	7	7
Resp41	3	4	2	2	6	5	4	7	7
Resp42	6	6	5	6	6	5	6	6	6
Resp43	7	5	3	6	5	5	5	2	2
Resp44	6	6	5	6	3	3	3	5	5
Resp45	6	5	5	4	6	6	5	6	6
Resp46	5	4	5	6	5	4	6	6	5
Resp47	6	3	4	3	7	7	3	6	3
Resp48	6	4	3	3	4	5	5	6	6
Resp49	5	5	2	7	7	4	4	5	5
Resp50	4	3	2	2	7	5	2	7	7
Resp51	5	5	5	6	4	4	5	6	6
Resp52	6	6	6	6	4	4	5	7	5
Resp53	5	3	5	6	6	6	6	3	3
Resp54	6	4	5	6	6	6	6	5	5
Resp55	6	6			2	7	3	7	7
Resp56	6	6	3		4	6	6	6	7
Resp57	5	6	5	5	6	6	3	6	6
Resp58	6	6	5	5	5	5	5	6	6
Resp59	7	7	5	7	5	6	4	7	7
Resp60					7	7			
Resp61	5	6	6	6	5	6	6	7	7
Resp62	5	5			6	6	3	7	7
Resp63	7	7	6	6	7	7	7	7	7
Resp64	6	6	2		6	5	6	6	6
Resp65	3	2	3	6	6	6	3	7	7
Resp66	4	3	3	6	6	5	3	6	4
Resp67	4	3	3	3	6	6	3	6	6
Resp68	3	5	2	5	6	6	2	7	7
Resp69	3	3			7	7	6	7	7

	11.3	11.4	11.5	12.1	12.2	12.3	12.4	12.5
Resp1	5	4	3	4	2	6	5	2
Resp2	7	5	4	7	6	6	2	5
Resp3	5	6	7	4	6	7	5	6
Resp4	5	6	6	6	5	7	4	5
Resp5	2	2	2	2	2	6	4	2
Resp6	6	7	5	5	5	7	4	3
Resp7	5	5	5	5	3	7	3	3
Resp8	5	5	5	7	7	7	7	7
Resp9	3	5	5	6	4	4	3	3
Resp10	2	3	2	6	7	5	5	2
Resp11	5	6	6	5	5	6	5	6
Resp12	6	6	7	7	6	6	5	7
Resp13	4	4	7	7	6	5	5	3
Resp14	6	6	7	7	6	7	3	7
Resp15	5	5	6	6	5	6	7	5
Resp16	4	5	5	4	5	5	4	4
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Resp20	7	7	7	7	5	6	5	6
Resp21	6	6	6	6	5	7	7	7
Resp22	6	7	7	6	6	6	6	6
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Resp24			4	3	2	6	2	3
Resp25		6	7	5	5	3	3	2
Resp26	6	6	6	6	6	7	6	5
Resp27	7	7	6	7	3		2	5
Resp28	3	6	7	7	7	7	5	6
Resp29	5	6	7	6	6	6	5	5
Resp30		4	5	3	3	6	3	5
Resp31	7	6	5	6	6	6	3	6
Resp32	7	7	7	5	3	7	7	5
Resp33	7	5	4	2	5	5	5	2
Resp34	5	5	6	6	5	7	4	5
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Resp36	5	5		4	5	4	5	4
Resp37	6	5	5	3	2	6	5	4
Resp38	3	5	5	4	3	6	3	6
Resp39	5	6	6	6	5	6	5	5
Resp40	7	7	6	6	6	6	5	5
Resp41	6	6	6	3	3	7	7	4
Resp42	6	6	6	5	3	4	3	2
Resp43	2	2	2	2	2	5	7	5
Resp44	5	3	4	5	3	5	4	3
Resp45	3	5	6	6	6	6	6	6
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Resp48	4	4	5	4	3	6	3	4
Resp49	6	5	4	3	2	5	3	2
Resp50	5	7	6	7	3	7	3	7
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Resp52	4	4	3	3	7	5	3	2
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Resp54	3	6	6	6	7	6	4	4
Resp55	7		6	5	2	6	7	6
Resp56	6	6	6	6	3		2	3
Resp57	6	6	4	5	5	4	4	5
Resp58	6	5	5	4	3	6	7	5
Resp59	7	7	6	5	7	7	5	4
Resp60				6	6	6	3	
Resp61	7	6	6	6		7	6	6
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Resp63	7	7	7	7	6	7	7	7
Resp64			5	2	2		5	6
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Resp66	5	6	6	6	6	6	2	3
Resp67	3	5	6	6	4	6	5	6
Resp68	7	6	6	6	2	7	5	6
Resp69	6	6	7	5	5	7	3	6

	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11
Resp1	3	3	4	3	3	2	2	3	3	2	3
Resp2	4	4	4	4	4	6	5	4	4	4	5
Resp3	4	4	6	4	3	3	3				4
Resp4	4	3	5	4	3	3	3	4	3	5	3
Resp5	2	2	2	3	3	2			4		3
Resp6	3	4	7	4	3			3	5	5	3
Resp7	3	4	5	3	4				4	6	3
Resp8	6	6	6	7	6	7	6		4	2	
Resp9	7	3	7	4	4	4	3	4		4	4
Resp10											
Resp11			5	3	3			3	3		
Resp12				4							
Resp13			5	2	2			3	3		3
Resp14	6	7	7	3	7	4	7		7		5
Resp15				4				5	4	3	4
Resp16			7					3			
Resp17	3	3	5	4	3	2	3	3	4	4	3
Resp18	4	3	4	4	3	3	3	3	3	4	3
Resp19	2	4	5	2	3	3	3	3	5	4	3
Resp20	6	6	7	3	6			4	4	5	3
Resp21			6	4				3	4	4	3
Resp22	3	4	7	3	4	6	5	5	5		4
Resp23	5	3	3	3	3	2	2	2	2	2	2
Resp24	3		7	3	2			3	3	4	3
Resp25			7								
Resp26	2	7	7	2	7			5	7	7	5
Resp27				4							
Resp28	4	3	6	3	3			3	3	7	
Resp29											
Resp30											
Resp31	2			2		6		3		5	4
Resp32	6			4				6		5	3
Resp33	2	3	6	3	3				5	5	4
Resp34	3	4	6	3	3			3	3	3	3
Resp35		4	7		4				4	6	4
Resp36			7	4	4				5	7	4
Resp37	5	4	5	4	4	2	3	3	3	7	3
Resp38	3	3	3	3	3	2	3	3	3	2	3
Resp39	2	4	7	2	4	3	3	6	4	4	3
Resp40	7	4	7	4	4				5	4	3
Resp41	6	3	3	4	3			4	4		3
Resp42								3	4		
Resp43			5								
Resp44											
Resp45											
Resp46				4			5			7	3
Resp47	4	3	5	4	3	2	2	3	2	2	3
Resp48											
Resp49	3	4	6	3	3	2	3	3	4	2	4
Resp50				3							3
Resp51	3	3	5	5	4	5	5		5	5	4
Resp52	3	3	7	3	2			3	3	5	2
Resp53		3							4		3
Resp54			6								
Resp55										5	4
Resp56	4	4	4	3	3			3	3	4	3
Resp57			4								
Resp58	4	3	4				4	3	5	3	5
Resp59		3	4	2	2	2	2	3	3	2	3
Resp60											
Resp61	3	4	4	4	4	4			4	2	4
Resp62	4	4	7	4	4				4		
Resp63			7						7	7	7
Resp64	3	3	5	4	3			3	4	2	3
Resp65				6						4	5
Resp66	4	3	7					3	3		3
Resp67	5	3	7	4	3	3	3	3	4	5	3
Resp68	4	4	6	3	4				5		
Resp69	3	3	4	4	3				4	4	3

APPENDIX B

STANDARD PHRASES USED IN THE SURVEY

To the switchboard, help desk, receptionist:

“Can I speak to the person responsible for the thinking, or strategy, behind your web offering (or, if more simplicity / clarity is required, “your website”), not your technology manager but possibly your e-commerce or e-business manager, or your marketing person responsible for online sales (or, if more clarity is required, “your web sales”).

Introduction:

“My name is Glen Mansfield (to put the person at ease) and I am calling from Stellenbosch University.”

Background

“I am busy with a top-level PhD study into the strategies employed by e-commerce practitioners. Based on a 2-year academic literature and best practice review I have prepared an online survey document to find out now what SA e-commerce practitioners find important. I intend correlating these findings with performance.”

Request

“Could I ask you to participate in our project? It will take about 10 minutes of your time. In order to provide feedback, once you have completed the survey I am making the aggregated results available to the respondent so you can see what the rest of the country find important in making their web offerings more effective.”

Acquiescence

Once the respondent agrees the process is explained. S/he will receive an email with a unique user ID which must be entered to begin the survey.

Peace of mind

The confidentiality of the individual response is guaranteed and the role of the University in ensuring appropriate compliance is mentioned.

Thanks

The respondent is thanked and any requests they might have (more information, timing or purpose)

APPENDIX C

PILOT STUDY - EMAIL SOLICITING PARTICIPATION

Dear NAME

Our phone call of today refers. My sincere thanks for agreeing to participate in the survey pilot study. Click on "Access the survey" in the email below (or click [HERE](#)). Your unique USER ID is nnnnnn. Please complete the study today if possible.

This is a pilot study and your comments on the questionnaire, or process, will be most welcome. Make some brief notes when you complete it. I will send you a short email under a separate heading asking for your feedback on the survey questionnaire. Note that this is a PILOT study. If there are questionnaire changes, as a result of the responses we receive, I may need to contact you again and request that you assist us in the final survey.

Thanks again and kind regards

Glen Mansfield
Project Leader



e-Commerce survey

Participate in our e-commerce review project (15 minutes), view the aggregate responses of other CEO/CIOs and see how your business compares with the typical SA e-commerce firm.

You are invited to join other e-business executives in a project assessing the value of strategy (Strategic Architecture) on the performance of South African e-commerce ventures. It is the first such study ever undertaken locally.

Once you complete the thought-provoking, web-based survey which takes about 15 minutes and when all the results are in you will be able to view the aggregated responses and compare your submission with the total. For more information contact the Project Leader, Glen Mansfield at the Stellenbosch Business School on 083 282 8410 or (021) 918-4342.

NOTE: Stellenbosch University insists upon, and guarantees, the confidentiality of every individual response. Only the aggregated results may ever become generally available. Respondent data may NEVER be given to any third party.

Your User ID for accessing the survey is:

A useful spin - off of the study has been the possible application of the survey questionnaire as a diagnostic tool for use **within** a business to evaluate the alignment of its technology strategy with corporate goals. When we have sufficient data the alignment auditing facility could be available for application in your business. Email the researcher at the Business School, *only once you have completed the survey*, if you would be interested in such a project at some future date.

[More about Strategic Architecture](#)



[Access the survey](#)



[e-Mail the researcher at the Business School](#)



[Visit the Business School website](#)



APPENDIX D

PILOT STUDY - EMAIL REQUESTING COMMENTS

From: Mansfield Glen USB

Sent: Thu 05/02/2004 15:38

Business School

Thanks - e-Commerce survey

Dear respondent

Please accept my sincerest appreciation for assisting us with the e-commerce survey. As I explained, it is not easy to get busy people like yourselves to participate in such a study and we do appreciate the time you took to assist us.

The results are coming in rapidly and it should not be too long before we have sufficient data to share the aggregated data with you as promised.

This is a pilot run and I would appreciate an email from you giving me feedback on the following:

Time taken to complete the questionnaire, did you find any particular question/s ambiguous or were unable to answer, were the scales we used adequate, what is your overall impression of the questionnaire? You can email me at glenm@sun.ac.za. NOTE: You have actually done enough for us already - you don't really need to respond (but I hope you do!)

If you are one of the few who have not yet been able to find time to do the questionnaire, your data is very important to us as we need 100% response if we are to get a handle on how big the e-commerce industry is in SA. This type of information will be to your advantage! Please click on "Access the survey" below and use the USER_ID I sent in my previous email.

This is the last email from me until I tell you that the aggregated data is available.

Kind regards - Glen Mansfield (Research Project leader)

[More about Strategic Architecture](#)



[Access the survey](#)



[e-Mail the researcher at the Business School](#)



[Visit the Business School website](#)



For more information call 083 282 8410

APPENDIX E
EMAIL REQUESTING PARTICIPATION

Dear Ian

Thanks for calling back yesterday.

I am busy with a top-level PhD study into the strategies employed by e-commerce practitioners. Based on a 2-year review of academic literature and best practice I have prepared an online survey document to find out now what SA e-commerce practitioners find important. I will correlate these findings with performance. Could I ask you to participate? It will take you about 10 minutes to do and the aggregated results could be helpful in your "e-strategy" development.

Please participate in the survey. We really need **ALL** the SA e-Commerce businesses to cooperate and we would really appreciate your contribution. It should take only 10 minutes to complete and you may find something of interest there for you. **We are making the aggregated results available.** When you hit the SUBMIT button, you will get the aggregated result. Please complete the PERFORMANCE section at the end to the best of your ability by responding to as many of the questions as best you can. **This is a VERY important aspect of the study.**

Click on "Access the survey" in the email below (or click [HERE](#)). Your unique USER ID is:

moniteri

Please complete the survey today, or as soon as possible. Your comments on the questionnaire or the process are most welcome.

Note that we are terminating the project on Thursday 4 March 2004, after which the aggregated responses will not be available.

Thanks again and warm regards

Glen Mansfield
Project Leader



e-Commerce survey

Participate in our e-commerce review project (15 minutes), view the aggregate responses of other CEO/CIOs and see how your business compares with the typical SA e-commerce firm.

You are invited to join other e-business executives in a project assessing the value of strategy (Strategic Architecture) on the performance of South African e-commerce ventures. It is the first such study ever undertaken locally.

Once you complete the thought-provoking, web-based survey which takes about 15 minutes and when all the results are in you will be able to view the aggregated responses and compare your submission with the total. For more information contact the Project Leader, Glen Mansfield at the Stellenbosch Business School on 083 282 8410 or (021) 918-4342.

NOTE: Stellenbosch University insists upon, and guarantees, the confidentiality of every individual response. Only the aggregated results may ever become generally available. Respondent data may NEVER be given to any third party.

Your User ID for accessing the survey is:

moniteri

A useful spin - off of the study has been the possible application of the survey questionnaire as a diagnostic tool for use **within** a business to evaluate its e-readiness and the alignment of its technology strategy with corporate goals. When we have sufficient data the alignment auditing facility could be available for application in your business. Email the researcher at the Business School, *only once you have completed the survey*, if you would be interested in such a project at some future date.

[More about Strategic Architecture](#)



[Access the survey](#)



[e-Mail the researcher at the Business School](#)



[Visit the Business School website](#)



For more information call 083 282 8410

APPENDIX F

REMINDER EMAIL TO NON-RESPONDENTS

From: Mansfield Glen USB Sent: Mon 23/02/2004 16:11

Dear e-Commerce practitioner

You will recall my recent telephone conversation and will have seen the e-mail I sent out requesting your assistance with our PhD-level e-commerce project.

The response from SA business has been VERY positive. Many have requested access to the aggregated data to see, based on a 2-year study of academic and overseas findings, what other South African e-businessmen find important when setting up a web-based business. As of today we have received enough data to reveal the aggregated response.

This email, the last you will receive from me, is to advise that the aggregated data is now available. For the first time EVER, the things important to South African e-commerce businessmen are available to all respondents. **Once you complete the survey you can find out what other practitioners find critical and what they are ACTUALLY DOING to make their websites more profitable.**

Thank you for offering to assist us and I eagerly await your response. I hope the ideas you get from what others are doing is useful to you. If you have lost/deleted your email with your personal User_ID, please email me. You must use your unique User_ID in order to make a submission.

Kind regards

Glen

The Strategic Architecture website is www.goodwill.co.za/sa

***** MESSAGE ENDS *****

Glen Mansfield
University of Stellenbosch Business School
Box 610 Bellville 7535 South Africa
Tel: 021 918 4342 Fax: 021 918 4468
Cell: 083 282 8410
Research topic web-site
<http://www.usb.sun.ac.za/USB/DocResearch/mansfield.html>

APPENDIX G
EMAIL THANKING RESPONDENTS

Subject: Commerce survey - Access to SA data now available

Dear Respondent

Many thanks for your assistance with our e-commerce project.

The data on what other South African practitioners are doing is now available. To access the data please click on the link below. Please remember that it is a WORK IN PROGRESS and the numbers will change. If you access the site again after a while, please hit the "refresh" button a few times for the latest data. Since it is my intention that we all learn through our project, please feel free to use this information to assist in making your websites more profitable.

<http://www.keyobjective.com/gm/postresp.jsp>

Kind regards

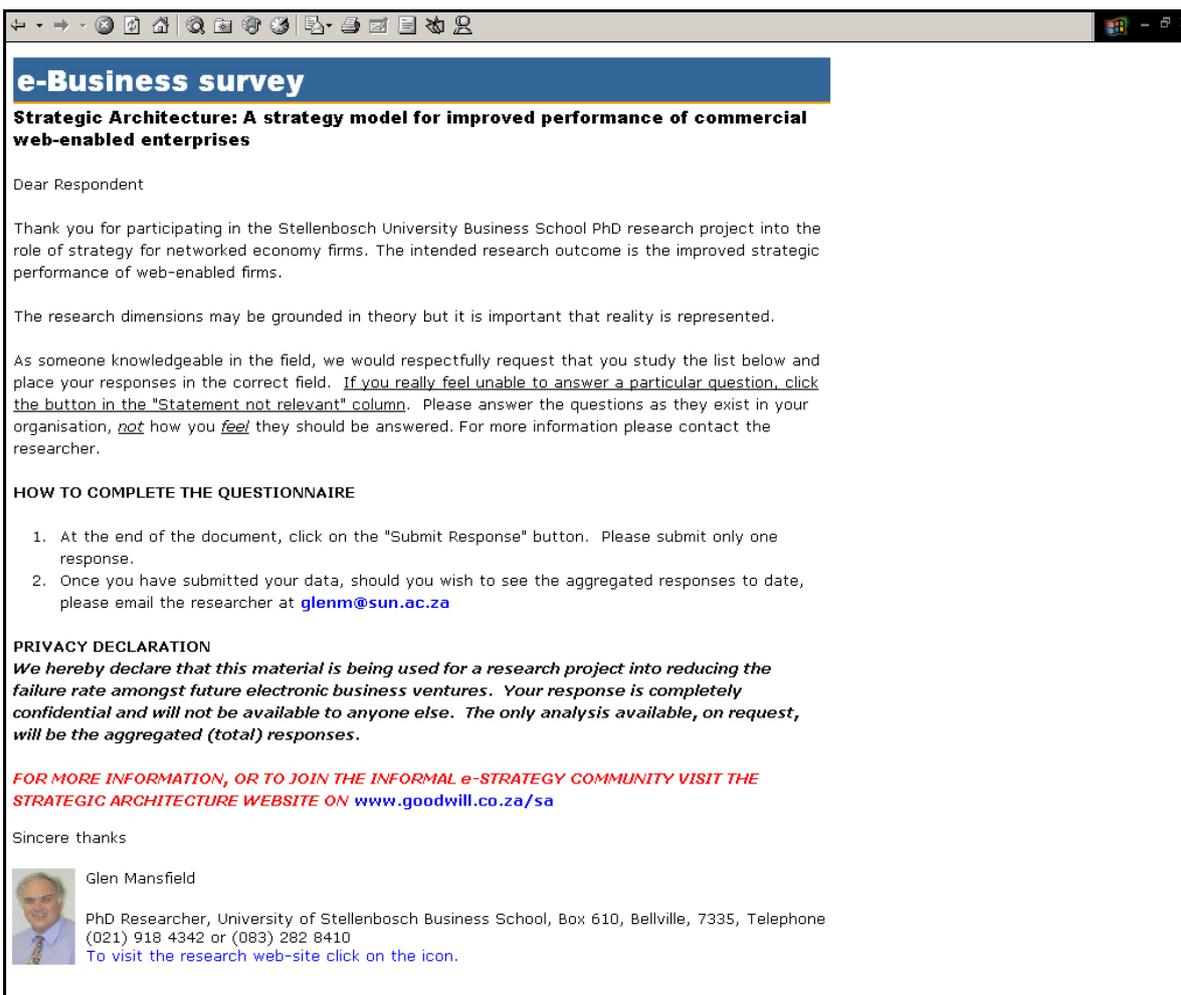
Glen

***** MESSAGE ENDS *****

Glen Mansfield
University of Stellenbosch Business School
Box 610 Bellville 7535 South Africa
Tel: 021 918 4342 Fax: 021 918 4468
Cell: 083 282 8410
Research topic web-site

<http://www.usb.sun.ac.za/USB/DocResearch/mansfield.html>

APPENDIX H
QUESTIONNAIRE



e-Business survey

Strategic Architecture: A strategy model for improved performance of commercial web-enabled enterprises

Dear Respondent

Thank you for participating in the Stellenbosch University Business School PhD research project into the role of strategy for networked economy firms. The intended research outcome is the improved strategic performance of web-enabled firms.

The research dimensions may be grounded in theory but it is important that reality is represented.

As someone knowledgeable in the field, we would respectfully request that you study the list below and place your responses in the correct field. If you really feel unable to answer a particular question, click the button in the "Statement not relevant" column. Please answer the questions as they exist in your organisation, not how you feel they should be answered. For more information please contact the researcher.

HOW TO COMPLETE THE QUESTIONNAIRE

1. At the end of the document, click on the "Submit Response" button. Please submit only one response.
2. Once you have submitted your data, should you wish to see the aggregated responses to date, please email the researcher at glenm@sun.ac.za

PRIVACY DECLARATION
We hereby declare that this material is being used for a research project into reducing the failure rate amongst future electronic business ventures. Your response is completely confidential and will not be available to anyone else. The only analysis available, on request, will be the aggregated (total) responses.

FOR MORE INFORMATION, OR TO JOIN THE INFORMAL e-STRATEGY COMMUNITY VISIT THE STRATEGIC ARCHITECTURE WEBSITE ON www.goodwill.co.za/sa

Sincere thanks

 Glen Mansfield
 PhD Researcher, University of Stellenbosch Business School, Box 610, Bellville, 7335, Telephone (021) 918 4342 or (083) 282 8410
 To visit the research web-site click on the icon.

Alignment and harmony ...	Statement not relevant	Totally disagree	Mostly disagree	Sometimes disagree	Sometimes agree	Mostly agree	Totally agree
11.1 The vision of the founder/investor/managing director motivates our entire organisation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11.2 The vision has been the driving force from the start of our business.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11.3 I sometimes feel that the vision is almost more fulfilling than the salary I receive.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11.4 The vision keeps the objectives of all our divisions closely aligned.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11.5 In this organisation executive management realise the importance of being totally committed to the successful performance of the information technology function.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12 Dynamic flexibility ...	Statement not relevant	Totally disagree	Mostly disagree	Sometimes disagree	Sometimes agree	Mostly agree	Totally agree
12.1 We spend money to ensure that we keep our business flexible.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12.2 We make use of pilot studies to test risky ideas or ventures.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12.3 Our staff are generally multi-skilled people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12.4 We have no time for the luxury of routine practices - almost everything we do has to be made up as we go.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12.5 Our business can change direction with minimal disruption.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PERFORMANCE SURVEY							
P1 Our return on assets (net profit/total assets) in the past three years was (%):	Statement not relevant <input type="radio"/>	Negative <input type="radio"/>	0 - 25% <input type="radio"/>	26 - 50% <input type="radio"/>	51 - 75% <input type="radio"/>	76-100% <input type="radio"/>	More than 100% <input type="radio"/>
P2 Over the past 3 years our return on assets (as defined above) has grown by:	Statement not relevant <input type="radio"/>	Negative <input type="radio"/>	Less than 25% <input type="radio"/>	26 - 50% <input type="radio"/>	51 - 75% <input type="radio"/>	76-100% <input type="radio"/>	More than 100% <input type="radio"/>
P3 For the past three years our turnover has shown positive growth.	Statement not relevant <input type="radio"/>	Never <input type="radio"/>	Almost never <input type="radio"/>	Occasionally <input type="radio"/>	Quite often <input type="radio"/>	Almost always <input type="radio"/>	Always <input type="radio"/>
P4 Our net profit margin was (%):	Statement not relevant <input type="radio"/>	Negative <input type="radio"/>	Less than 25% <input type="radio"/>	26 - 50% <input type="radio"/>	51 - 75% <input type="radio"/>	76-100% <input type="radio"/>	More than 100% <input type="radio"/>
P5 For the past three years our net profit margin GROWTH was (%):	Statement not relevant <input type="radio"/>	Negative <input type="radio"/>	Less than 25% <input type="radio"/>	26 - 50% <input type="radio"/>	51 - 75% <input type="radio"/>	76-100% <input type="radio"/>	More than 100% <input type="radio"/>
P6 Our value-add per employee over the past 3 years [calculated as: turnover-"bought in" (such as raw materials, outsourcing, etc)/total no of employees] was:	Statement not relevant <input type="radio"/>	Less than R100 000 <input type="radio"/>	R100 000 to R250000 <input type="radio"/>	R250 000 to R500000 <input type="radio"/>	R500 000 to R750000 <input type="radio"/>	R750 000 to R1m <input type="radio"/>	More than R1m <input type="radio"/>
P7 The growth in value-add per employee [calculated as in the previous question] was:	Statement not relevant <input type="radio"/>	Negative <input type="radio"/>	Less than 25% <input type="radio"/>	26 - 50% <input type="radio"/>	51 - 75% <input type="radio"/>	76-100% <input type="radio"/>	More than 100% <input type="radio"/>
P8 Our market share growth over the past 3 years was (%):	Statement not relevant <input type="radio"/>	Negative <input type="radio"/>	Less than 25% <input type="radio"/>	26 - 50% <input type="radio"/>	51 - 75% <input type="radio"/>	76-100% <input type="radio"/>	More than 100% <input type="radio"/>
P9 The GROWTH over the past 3 years in the number of customers who made one or more purchases was (%):	Statement not relevant <input type="radio"/>	Negative <input type="radio"/>	Less than 25% <input type="radio"/>	26 - 50% <input type="radio"/>	51 - 75% <input type="radio"/>	76-100% <input type="radio"/>	More than 100% <input type="radio"/>
P10 The conversion to purchase ratio (electronic purchases divided by site visits) was (%):	Statement not relevant <input type="radio"/>	less than 1/10 percent <input type="radio"/>	Less than 1/2 percent <input type="radio"/>	Less than 1 percent <input type="radio"/>	Less than 2.5 percent <input type="radio"/>	Less than 5 percent <input type="radio"/>	More than 5 percent <input type="radio"/>
P11 The GROWTH in average transaction value is:	Statement not relevant <input type="radio"/>	Negative <input type="radio"/>	Less than 25% <input type="radio"/>	26 - 50% <input type="radio"/>	51 - 75% <input type="radio"/>	76-100% <input type="radio"/>	More than 100% <input type="radio"/>
When you have finished, please click the "SUBMIT RESPONSE" button. If you have queries or comments email: glenm@sun.ac.za or call 083 282 8410. YOUR COOPERATION IS SINCERELY APPRECIATED.							

Note that once you have submitted your response you will not be able to edit or review it. If you want a copy of your response **PRINT BEFORE SUBMISSION.**

Submit Response

APPENDIX I
BEST SUBSETS REGRESSION TABLES

Regression summary - 6 dimension case

Regression summary - 6 dimension case						
<u>Regression Summary for Dependent Dimension: performance</u>						
R= .74 R ² = .55 Adjusted R ² = .46 F(6,32)=6.44 p						
	Beta	Standard Error	B	Standard Error	t(32)	p-level
Intercept:			1.76	1.23	1.43	0.16
Futurity	0.18	0.17	0.18	0.17	1.08	0.29
Customer centrality	0.44	0.15	0.52	0.18	2.93	0.01
Digital spontaneity	-0.38	0.18	-0.36	0.17	-2.15	0.04
Knowledge management	-0.30	0.17	-0.27	0.16	-1.72	0.09
Risk taking	-0.14	0.13	-0.13	0.13	-1.07	0.29
Dynamic pliancy	0.59	0.18	0.50	0.15	3.35	0.01

Bold type indicates dimensions of greatest significance (low p value).

Regression summary - 3 dimension case

	Beta	Std. Err.	B	Std. Err.	t(35)	p-level
Intercept:			0.74	0.84	0.89	0.38
Customer centrality	0.47	0.14	0.56	0.16	3.41	0.01
Digital spontaneity	-0.43	0.16	-0.41	0.15	-2.65	0.01
Dynamic pliancy	0.55	0.17	0.46	0.14	3.20	0.01

Bold type indicates significance (low p value).

APPENDIX J
CORRELATION MATRIX

APPENDIX K
APPEAL EMAIL

You forwarded this message on 2004/06/21 08:29 AM.

From: Mansfield Glen USB [glenm@belpark.sun.ac.za]

Sent: Fri 2004/06/18 01:07 PM

To:

Cc: glenmans@iafrica.com

Subject: Glen Mansfield - Now, I REALLY NEED your help - PLEASE

I **REALLY NEED** your help on completing just **four** fields below and emailing your response to me.

glenm@sun.ac.za



University of Stellenbosch
Business School

Mansfield e-Commerce survey

Please HELP me to make the findings applicable to the SA population

After many verbal promises I still need more responses to say with sufficient confidence that my findings apply to the entire South African e-commerce population. I need more demographic information on our e-commerce industry to confirm this. This is the end of a 3-year project. I MUST HAVE THIS DATA TO SATISFACTORILY COMPLETE THE PROJECT. Please complete this small table, below and email to me. [Hit "REPLY"](#) - Place an X or delete to show what is applicable to you. **If you insert your telephone number after your name I will call you personally to thank you!**

Many thanks

Glen Mansfield
Tel 083 282 8410

General respondent information

Respondent (your) name	<input type="text"/>								
Business name	<input type="text"/>								
Was this business formed as a web-enhanced venture for a previously off-line business (ie is this the online venture of a traditional bricks and mortar firm)?	Yes <input type="radio"/>	No <input type="radio"/>							
Has this business always been a pure online, electronic web-based venture?	Yes <input type="radio"/>	No <input type="radio"/>							
Did this business begin as a pure online electronic web-based venture and then establish an offline channel?	Yes <input type="radio"/>	No <input type="radio"/>							
Type of business model (select one)	e-Shop	e-Procurement	e-Mall	e-Auction	Value-chain service provider	Virtual community	Trust service	Information brokerage	Other
Total annual turnover		More than R40m	Less than R40m	Less than 20m	Less than R10m	Less than R5m	Less than R2m	Less than R1m	
Total full-time equivalent of paid employees (ie 2 half-day = 1 full-time)		More than 200	Less than 200	Less than 100	Less than 50	Less than 25	Less than 10	Less than 5	
On-line trading period (years)		More than 6	Less than 6	Less than 5	Less than 4	Less than 3	Less than 2	Less than 1	

APPENDIX L
LIST OF EXPERTS

Person	Details	Expert opinion	Supported research project	Responded to questionnaire test
Professor Andy Bytheway	Academic, industry expert. Faculty of Business Informatics Cape Technikon. Email address: abytheway@ctech.ac.za	x	x	
Professor Henry Chesbrough	Author, academic. Harvard Business School. Email address: hchesbrough@hbs.edu	x	x	
Dr Eric Cloete	Author, academic. Department of Information Systems University of Cape Town. Email address: ecloete@commerce.uct.ac.za	x	x	
Mr Shaun Pather	Researcher. Information Technology, Cape Technikon. Email address: spather@ctech.ac.za	x		
Dr Alexander Osterwalder	PhD candidate (eventually Dr) University of Lausanne Email address: Alexander.Osterwalder@hec.unil.ch	x	x	x
Dr Paul Timmers	Industry expert. Author, academic. Head of Sector, European Commission Electronic Commerce. Email address: Paul.Timmers@cec.eu.int	x	x	x
Professor Richard Whittington	Professor, author. Saïd Business School University of Oxford, United Kingdom Email address: richard.whittington@said-business-school.oxford.ac.uk	x	x	
Professor B Ragu-Nathan	Professor of Accounting. University of Toledo. Email address: fac1816@uoft01.-utoledo.edu	x	x	
Mr Michael Earl	Author and researcher. Oxford University Email address: michael.earl-@templeton.oxford.ac.uk	x	x	
Dr Alewyn Burger	Director, Strategic payments, Standard Bank	x	x	x
Professor Eonsoo Kim	Associate Professor of Strategic Management. Korea University. Email address: eskim@korea.ac.kr	x	x	

APPENDIX M
POPULATION

1Time	BOE Personal	** Educorp
20Twenty	Bouquet	e-Games
A2Zee	Business in Africa	Electronic Online
Aaca	Buy Computers	Embroidery
Absa	CaCell	EMKay Jewellers
ABSA Internet banking	** Call-A-Car	Energyzone
ABSA Securities	Cape Wine Gallery	EPS Store (rugby)
Accessories	* CapeAds	Eurojeweller
** Action Bolt	* Carte Blanche	** Exclusive Books
** Afri Thipa	Cdselectonline	Family Resources
Africa Artgallery	Cellular Mall	Fantasia Music
Africa Trade	** Centurion Micro Electronics	FGI
African Ark (Crystals)	Christmas Cards	First National
African Gemstones	Clydeon4Th	Firstmailorders
African International Shopping Mall	Coffee	Flight Shop
African Rock and Crystal	Computers Only	** Flowers
* African Sky	Computicket	Flowersonline
** Agricultural Research	CompuTrolley	Flyshop
Alexanderfontein Wine Store	Compuzone	Focus Features
Allan Gray	Coppercraft	Four by Four
** A E Barlow	Craze Concepts	Garden shop
Ananzi Auctions	Crystalsonline	Gardenrouteshop
Anglorand	** CSIR (Online shop)	* Gift Hampers
Antique Mall	** Cybercellar	Glomail
Appliance Africa	Cycle Lab	GpNet
Army and military stores	DC Africa	Habits
ARO	Deal McCoy	Herb Africa
Artboard Creative	DHL	Hobby Specialists
** Artiste Oils	Digital Cameras	* Home Safe
** Ascot Direct	Digital Express	Homemark
Assoc of Quantity Surveyors	Digital Mall	Hospitality Warehouse
ATX Continental	Digital Planet	HP Shop
Aucor Active	Direct Medicines	** I can on line
** Auctionalliance	Distell	Iafrica
Auxion	** Dongle Direct	IBS
Barking books	EAS	Iflora
Barnard Jacobs Mellett	Easybuy	Impact Video
Bed King	Easypay	** Incredible Connection
Bidorbuy	* e-Bucks	** Intersoft (Simron Trading)
BioMax Online	* Eagle Technology	Intro Stat
Blockbusters	e-Diamonds	ItWeb
Bluebean	** Educationaltoyshop	J Friedman

Jump shopping	Numetro	Spier Estate
** Kalahari.Net	Obros	* Standardbank
Kendon Medical Supplies	Oldmutualunitrusts	Stannic
* Kitchengarden	** Oneworld (Sheer Online)	* Ster Kinekor
Kite Shop, The	Orion's Belt	Stride distributors
Kulula.com	Oxylabs	Sunseeker
Liberty	** PC Discounters (Phoenix)	Sweets International
Lightsrus	PC Pix	* Sybaritic
Lindibell Windchimes	** Pcbooks	Take -2
** Lingerie	PG Glass	Taxbreak
Lookandlisten	Pharmacy4U	Tech Home
* Magsathome (Ramsey Son)	** Picknpay	The Pro Shop
Makroshop	Plates	Time Slice
Martial Arts	** Porterville Cellars	** Toner
Maties Travel	Poster Shop, The	Tradek
** Mecer online shop	** Present Time	Train at Home
Mega Jet (printer refills)	* Pro Shop, The	* Truworths
Megashopper	Psgonline	TV Licences
Men's Health online store	* Radio Pulpit Bookshop	Two's A Team
Message from the heart	Redlorry	** UView Business solutions
Metropolitan Life	Regus	UniRoss
MHG	* Rhema Bookshop	Verimark
Mind Frame	* RMB Unit Trusts	** Vetproductsonline
* Moneymax	Rock Sport	* Vgallery
* McCarthy Online	Rosebank Pharmacy	Waltons
* MP3 Direct	SA Airlink	** Watchco
Mr Mattress	** Fly SAA	Web Bikes
MTN	SA Express	* Webshop (Webtrading)
* Muscle SA	* SABC Business Enterprises	* Wesbank
** Musica	Sage	Wesleys Tobacconist
** Musiek	Sageonline	What's in the Basket
MutiMan	** Salesonline	Wholesaledigital
Mweb	* Santam (Insurance)	** WineNet
Nature's Path	Saproducts	** Wine from Africa
Nedbank	SCMB	Wine Mag
Nederberg Wines	Scubadiving	* Winchester Foundation
Neethlingshof Estates	Sea Kayak	Wines of the World
* Netflorist	Setcom	Wits Alumni Store
Netshopping	* Sharenet	Woolworths
** Nmg Trading	Sharp	Worldonline
No Gap Gifts	* Shop 398	Xsinet
Notebook Company, The	Speed Services	Ysterplaat Medical Supplies
		Zen Dynamics

* Respondent (n = 69)

** Usable data (n = 39)