An investigation of the key factors that influence perceptions of managers impacting sustainability of IT services organisations located in Singapore

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Abstract

The world is changing, and the market is changing, at speed of light. The ongoing global pandemic, environmental pressures, cost pressures, inequality, and productivity challenges are having an impact on every industry, business and organisation. The world of Information Technology (IT) business is a boiling cauldron. Some organisations grow rapidly, others disappear almost instantly, and some of them, often the larger organisations, stagnate and wither slowly. With all this happening, one of the main concerns for leaders is *"how can my organisation become sustainable?"* This has resulted in a growing number of sustainability initiatives across all industries. It can be argued that IT Services is one of the industries most impacted by the changes in the economic and business climate. As a result, there is a growing, if not an insatiable, desire to create a sustainable organisation. Even though there is some literature available describing organisational sustainability, there is limited literature available on sustainability of IT services firms. If you add the geographical dimension of Singapore, the amount of literature really dwindles.

The researcher adopted a qualitative approach to analyse the perceptions of managers employed in IT firms in Singapore on organisation sustainability. Similarly, this research thesis adopted a qualitative approach using Grounded theory to analyse managers' individual views, experiences, meanings, and perceptions to events and situations.

This allowed the researcher to describe and characterise a theoretical framework – Sustainability Quadrant.

Fourteen managers participated in the study, which was conducted through semi structured interviews as a research instrument.

A conceptual model was developed with recommendations to managers along with the prioritization of the same. The findings suggest that there are quite a few factors that influence the perception of the managers and they can be analysed, categorized and summarized as a set of characteristics and concomitant recommendations to help managers improve the sustainability of IT services firms in Singapore.

This thesis provides the basis for further empirical research into organisational sustainability for IT services firms, as well as providing guidance on some of the conceptual and practical implications for managers to deal with the topic of organisational sustainability. Sustainability as a concept is lot more relevant after 2020, where we witnessed an eternal factor like "*pandemic*" challenge the sustainability of industries not just firms. These external factors will continue to happen, and managers can only prepare and mitigate the risk.

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1. Introduction

Over the past few decades, sustainability issues have become progressively more prominent on the business agenda for every organisation (Hanna, 2012). The focus has shifted from compliance and reputation management to long term risk management and competitive advantage (World Bank, 2011). There is a perceptible rise in the strategic importance accorded to sustainability (Hanna, 2009). There is very little stability in the business of IT (Hanna, 2012). Organisations that were dominant market players (like Netscape) do not exist anymore. The ones at the top today were not here two decades ago (Monteiro et al. 2003). It seems that very few of IT organisations manage to successfully sustain in the long term (Jorgenson, 2006). In this chapter, the researcher introduces the topic of organisational sustainability, its relevance for IT services industry. The researcher also explains the rationale for the study, analyses the IT services sector, its unique nuances and the noteworthy aspects of IT services sector in Singapore. This chapter also expounds the proposed aim and objectives of the study and finally provides an overview of the contents in this thesis document and its structure.

1.1. Brief Introduction to the topic

There has been a noticed period of heightened volatility from 1986 till 2020 for various business firms across a range of industries (Kamal, 2020). Out of the many organisations mentioned in the 1986 edition of Fortune 500, only 8% of them have made it to the 2017 edition (Anthony et al. 2016).

The trend continued beyond 2017. In 1950s, the average lifespan of an organisation on S&P 500 (Standard & Poor's 500 index) was 60 years, in 1965 this shrunk to 33 years in 1990 to 20 years and is projected to further shrink to 14 years in 2026 (Morgan, 2020).   If this is the fate of large established firms, what happens to smaller organisations? According to the US Bureau of Labour Statistics (2011), small organisations are disappearing at a much faster rate. Information Technology (IT) is one area that has become synonymous with rapid innovation (Jorgenson, 2016). IT organizations across the globe embody the concept of '*continuous innovation*', yet a number of these firms are disappearing. Once behemoths- Sun Micro Systems, Netscape and many other product, services firms have either disappeared into oblivion or subsumed by larger organisations and have since then lost their brand identity (Monteiro et al. 2003). The fast-paced growth of the IT organizations led to the attainment of substantial hold in their fields (Hanna, 2012). Staggering growth of firms like Infosys, Apple, Microsoft, Amazon Web services is a testimony to the fact that there is serious potential for IT organisations to outpace the growth of traditional firms (Jorgenson, 2016). Singapore's remarkable success in economic development has been strongly associated with the country's vigorous efforts to embrace the Information and Communication Technology (ICT)/IT revolution that could effectively promote economic growth (Vu, 2013).

Given the success attained by the ICT based organisations and the focus of digitization across all businesses, Singapore has been chosen as the geographical boundary for the research study.

The answers to the research questions that the study intended to quest for were - What are the reasons for IT organisations to stand the test of time and sustain? The question is about longevity and performance of IT services organization as a going concern.

Is it culture, capabilities of human resources, shift in customer preferences, diversity, financial strength, sound strategy or their innate business environment? And what are the recommendations for the IT services organisations in Singapore to stand the test of time and sustain in this turbulent world?

The researcher intended to find the perception of managers on the factors that impact the sustainability of IT services organizations in Singapore to achieve the business outcome with the current research: To help IT services organisations in Singapore identify and understand the key factors that impact their sustainability. These factors were drawn from the perceptions and experiences of managers who spent their time working in the field of IT services in Singapore.

The primary focus of research was sustainability. Sustainability has been a comprehensive issue for the economy, the organisations and the population, and is being helmed as a systemic concept (Buys et al. 2014). The United Nations' Brundtland Report defined sustainable development as "*the one that meets present needs without compromising the ability of future generations to meet their own needs*" (Brundtland Commission, 1987) The economies around the world are grappling with several challenges that transcend the environmental, social and economic dimensions of sustainability.

These challenges are inclusive of and not just limited to natural disasters, global warming, climate change, hunger and malnourishment, poverty, economic inequity, social insecurity, and the loss of flora and fauna (Elkington, 1997).

Thus, considering the dynamicity, the United Nations General Assembly adopted the Sustainable Development Goals (SDGs) on September 25, 2015, which focussed on the urgent need to ensure world development, end of poverty and rendering of protection to the environment by the end of the year 2030. Under the stipulated 17 goals, there are 169 specific targets that intend to strike a balance between the social, environmental and economic aspects of sustainable development. Business organisations are considered as one of the major stakeholders, who are bestowed with increased potential to contribute towards the SDGs. Much of their abilities to uphold the SDGs stems from their increased access to resources and their relative influence worldwide (Shanmugasundram, 2018).

Considering the organisations, the implementation of economic, environmental and social actions within a realm of sustainability can be credited to the innate aspect of globalisation that is effectively impacting the functioning of any firm (Loorbach, 2017).

Furthermore, with the current orientation of the business houses, there is a growing demand of the stakeholders and the associated members of any organisation to be transparent in their functioning and pursue their duty towards social commitment (Loorbach, 2017). These actions could be reviewed as the mechanism that would aid in the enhancement of the corporate image and the reputation of the organisation (Lassala, 2017).

Since the 1950s, ICT has made immense contributions and leeway in the respective field and has been a major source of innovation and generation of wealth. Despite the advancements the credibility of the organisations is often undermined by their increased contribution towards environmental contamination (Yen-Chun, 2014).

The producers of ICT products have generated massive amounts of hazardous occupation and environmental by-products (Yen-Chun, 2014). Further the disposal of millions of electronic devices in landfill every year adds on to the massive contamination of the environment. Manufacturing and the production of ICT-related products and services accounts for increased electricity consumption worldwide which has led to a significant rise in the emission of the carbon dioxide levels. The volume of greenhouse gas emission that has been generated worldwide has increased by 70% between the years of 1970 and 2004 (Janssens-Maenhout et al. 2019).

Based on the study of data from various sources, the researcher found the following startling facts

- There are 45 billion servers in the world that need to be powered to manage our emails, photos, data, etc. According to a recent report from Shift Project, the Internet is the cause of about 7% of global energy consumption (The Shift Project, 2019).

- As per guidance from Energuide.be magazine, one-megabyte email (1 MB) during its total life cycle emits 20 grams of carbon dioxide, i.e. the equivalent of an old 60 W lamp lit for 25 min. Twenty emails a day per user over one year, create the same carbon dioxide emissions as a car travelling 1000 km.

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When browsing the web, an average internet user yearly needs about 365 kWh electricity and 2,900 litres of water, which corresponds to the carbon dioxide that is emitted when one travels a good 1,400 km by car.

- Estimates from the Cisco Visual Networking Index indicate that global traffic of 46,600 Gigabytes per second product in 2017 will increase to 150,700 Gigabytes in 2022 (Cisco, 2017).

- A few years ago, the Google search engine made public its consumption: 2.26 kilowatt-hours per user. This is equivalent to the energy needed to keep a 60-watt light bulb on for three hours.

Thus, it is no longer feasible for the business houses to continue conducting their business in a manner that has been proven to be detrimental to the environment, that is, due to "*increasing risks of serious, irreversible impacts from climate change*" (Stern, 2017), and is also not in congruence with the SGDs set by the United Nations. Thus, sustainability is the call for the hour that the organisations are required to rely upon for their future endeavours. It is critical to acknowledge that sustainability is not just limited to being responsive to the ecological concerns but is also inclusive of the legal, ethical, discretionary and economic responsibilities that a concerned organisation must incur (Shapiro-Garza, 2013). Zhang (2020) opined that the recent Sustainability Reporting initiatives by Singapore Exchange brought focus on sustainability for Singapore firms.

Sustainability is the process wherein any organisation plans to take actions that would help them to achieve the indefinite maintenance that can fulfil their needs and express their greatest potential in the present (Lee , 2012).

Most of the literature that was analysed on sustainability of organisations alluded to three domains of sustainability (also being referred to as triple bottom line [TBL]) viz. social, economic and environmental sustainability). TBL concept is the most common framework utilised in the management field to conceptualise various aspects related to the organisational sustainability (Bansal, 2014). It has been posited as the simultaneous pursuit of economic prosperity, social justice and environmental integrity (Elkington, 1997).

There are no universally accepted sustainability standards, or methodologies for measuring, assessing and/or monitoring an organisation's progress towards sustainability (Jeurissen, 2000).

As per the TBL logic, organisational sustainability meant achieving financial, social and environmental objectives in an integrated manner with positive reinforcement (Elkington, 1997). According to the financial sustainability, there must be an extensive and viable interaction between the relevant consumer base and the market segments that would effectively lead towards the financial health of the said firm. Environmental sustainability referred to policies or actions taken by the organisation that would prioritize reduced waste generation and ensure the development of a proactive and environmentally conscious working environment. Social sustainability can be attained by conducting practices and policies that would lead towards gender and social equity, ensuring better standards for living, including people belonging to different diversities (Shapiro-Garza, 2013).

The TBL logic is also referred to as PPP logic represented as people-social dimension, planet- environmental dimension and profit- economic dimension (Bansal, 2014).

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Thus, setting up of the organisational sustainability should emphasize upon the organisation's activities that contribute to the economic, social, and environmental domains of sustainability by meeting stakeholders' needs in the present without compromising on the requirements of future generations (Carroll, 2014).

The economic domain refers to the financial bottom-line under the consideration of creating long-term economic prosperity through efficient use of resources and the productive capacity of the organisations.

The social domain reflects an organisation's impact on social justice in terms of knowledge, skills, motivation, and loyalty of employees, as well as its social impact on and trusts of its business partners, communities, and society. The environmental domain refers to an organisation's ecological integrity and its efforts to reduce the size of its environmental footprint (Bansal, 2005; Jeurissen, 2000). This research project accorded equal importance to all the three dimensions and sought to determine the influence of all these three dimensions on the sustainability of IT services organisations in Singapore.

1.2. Research background

Modern business environment is complicated because of a multitude of internal and external drivers that impact the performance (De Brito, 2008).

Although most successful business operations share few common strategies and practices, there is no universally accepted system that could effectively measure the conducted strategies and practices (Bradley, 2002). As such, organisations must develop their own methods to operate and achieve sustainability (Foster, 2016).

The business environment within which the IT organisations' function faces various challenges. Furthermore, it is also important for the said firms to ensure execution of day to day operations that remain in line with the economic, environmental and social concerns (Waite, 2006). However, managing this balance is particularly challenging for corporations in the '*Digital World'*, as compared to the corporations of the '*Industrial Age'*; the business conditions under which today's firms operate, as well as the products and services offered, have changed dramatically (Sikdar, 2020).

Further Chakravarty (2013) argued that traditional sustainability theories are not applicable for organisations that thrive in hyper competitive and rapidly changing environments. He asserted that morphing required strategic aligning of the current business operations with future business needs. When organisations have realized a measure of success and have managed to be in business for an extended period (over ten-fifteen years), they often find it difficult to recognise the need for strategic change. He also opined that it is particularly challenging to understand and accept that what contributed to sustainability of performance in the past may not be the requirement in the future.

1.3. About IT Services firms in general

ICT (Information and Communication Technology)/IT (Information Technology) firms provide techniques that have been actively used for data storing, processing, transmission, capturing and the display and retrieval of information, the results of which can be communicated in the form of a model or attribute or via the combined form through computers (Brynjolfsson, 2000).

Thus, ICT is a comprehensive field inclusive of computers and varied information systems that intend to map out desired solutions to the users (Brynjolfsson, 2000).

ICT has transcended beyond the traditional manner of communication and has greatly influenced every walk of human life, at all, local, national and international level (Cheng, 2012). The advent and growth of ICT has revolutionised the entire concept of livelihood encompassing both the personal and professional lives of the involved stakeholders (Oliner, 2000).

The digital revolution has provided and improved the ability of the concerned stakeholder to process the relevant data in more than one medium, and does the same with intense precision, accuracy and reliability (Berisha-Shaqiri, 2014). Thus, when any individual or organisation intends to grow its influence in the society, they can no longer remain aloof of ICT and its different inventions. The nature, function and impact of ICT depend on the individual or the organisation and their relative need for information (Berrio et al. 2018). It may be noted that the abbreviations IT, IS and ICT are used synonymously in the industry.

IT and computer networks allow and enhance the global economic, political and cultural connection. Organisations use IT as a strategic tool that would enhance their competitive advantage in the market and provide them with a loyal and extensive consumer base. IT contributes towards the optimisation of the concerned organisations, enhance their functioning, and enable their growth in the global market (Berisha-Shaqiri, 2014).

Globalisation and computerisation have collectively altered and redefined the politics, social and cultural order of the world (Douglas, 2002).

Globalisation has led to the integration of economic and cultural institutions; this integration has been made possible due to the use of ICT (Cheng, 2012). The technological revolution necessitated and enhanced the occurrence of global computerised networks and facilitated the movement of information, people, goods and services across the national boundaries (Brynjolfsson, 2010). Thus, both the phenomenon of Internet and global computer networks has provided impetus to globalisation with the generation of technological infrastructure for the global economy (Douglas, 2002).

The presence of satellite-communication systems, software and hardware, and computerised networks has led to the development of the global economy (Douglas, 2002). Thus, such a consolidated global network has given rise to the growth of IT firms that have focussed their functioning on ICT and its relative services (Berisha-Shaqiri, 2014). The researcher also realised that the ICT services have become lot more relevant in today's world thanks to the pandemic situation we are passing through.

During the pandemic that started in 2019, every business, small or large has gone through serious disruptions and have resorted to IT for a bail out. Due to the disruptive and destructive nature of this pandemic, it has postured significant social and economic repercussions (both direct and indirect) across different businesses and sectors, globally (Kamal, 2020). Owing to the pandemic, digital adoption has taken a quantum leap at both organisational and industry levels. The survey by McKinsey (2020) confirmed that the rate of adoption of IT and as a consequence, the requirement of IT services has grown by more than 40% from the previous years.

The business basis of professional service firms in principle rests on the demand for additional qualitative or quantitative problem-solving competence on part of their clients. There are two basic types of IT services firms.

The first type of business is the consulting business. It addresses problems, which are often not clearly defined by clients. The objective of this kind of service is to develop ideas and concepts, which form the basis of the client's decision making. A typical claim of consultants is the development of constantly new specific solutions for each client. This is also referred to as "*expert services*". However, whether IT services firms can live up to this claim in the individual case remains questionable (Maister, 1997).

When additional quantitative problem-solving competence is required, professional service firms, which only provide personnel capacities, are mainly employed. With the help of these additional capacity complex customer problems can be solved, but at the same time these issues are relatively similar. This is a regular type of business that the IT services firms conduct in today's economy (Maister, 1997).

1.4. About IT Sector in Singapore

The role of ICT in speeding up economic growth has been empirically established in the context of several mature economies (Erumban, 2016). The service sector made up 71.6% of GDP as of 2020, the backbone of the sector is Singapore's financial activities (Globaldata, 2020).

Singapore is ranked the world's fourth largest financial centre after London, New York and Hong Kong (Globaldata, 2017).

With the recent adverse socio-political developments in Hong Kong, Singapore has the potential to dethrone Hong Kong as the most sought-after destination (Globaldata, 2020). Industries, such as ICT are very prominent in Singapore, signifying that theirs is a more service driven economy by nature (GMID, 2020). Information and Communications are also crucial, since the beginning of the 1990s, the IT services market had been characterised by high growth rates and intensification of global competition (IDC Market Research, 2020). Singapore followed suit due to the pioneering initiatives around ICT taken in the country (Vu, 2013). Quah (2018) highlighted the positive impact that the economic policies have on IT services and also other industries in general. The huge growth was not only based on increased demand on the IT service sector, but also on the typical '*up-or-out*' career system furnished by the IT service firms.

Since professionals in such a system can only stay with an organisation if they continuously advance and climb the respective steps on the career ladder, career and growth pressure in professional service firms inevitably starts to rise (Li, 2010).

There is a limited amount of literature available on Singapore's ICT firms, however if some of the principles of ICT firms are applied, the following are the prominent characteristics noticed among the IT services firms in Singapore that are consistent with the attributes observed among the IT services organisations globally,

- Higher profit margins compared to other commoditized industries- there is also a pressure of expectation on these firms to retain these high margins (Brynjolfsson, 2009).

- Deep focus on learning- Fast learning is an important attribute for resources working in the industry. The industry changes fast, the learning must change at a faster pace. Electronic mode of consumption of learning happened to be the most popular and widely acknowledged by the organisations and individuals (Michael, 2003).

- Very high rate of technological change- ICT firms go through a period where there is technological change and the onus is on them to adapt to these changes continuously (Hanna, 2009).

- For IT services firms, resource costs almost account for 70% of the firm's cost of goods sold. Employees are the most important assets to the IT services organisations and the leaders of the industry have recognized this phenomenon (Maister, 1997).

- High rate of disruptions- Historically, this industry has experienced quite a few and frequent disruptions due to the changes in technology. There have been changes in delivery approaches, the technologies that have been in vogue and even customer engagement approaches have changed (Jorgenson, 2016).

Total size of the IT sector is projected to be 7.8 Trillion USD in 2022 (CompTIA, 2020). USA holds the maximum share (3.2 Trillion). This market is predicted to grow at a compound annual growth rate (CAGR) of 9% (IDC Market Research, 2020). The Information Technology spending is primarily categorised into three areas: hardware, software and IT Services. Average global spending in 2020 on hardware was 44% of the overall IT spending, whereas, the average spending on software was 20% and the average percentage spending on IT services was 36% (IDC Market Research, 2020).

Global trends suggested that the share of IT services and software is growing steadily while the share of hardware spending is dwindling slowly (IDC Market Research, 2016).

Compared to firms with other knowledge intensive industries, research suggests that IT software firms (both products and services) have a very high rate of failure (Li, 2010). Singapore experienced a CAGR of more than 15% in the IT services space due to the additional spending made by different industries in digitizing their businesses (GMID, 2020).

Singapore' economic policy is pragmatic and business friendly. Organisations will find it easy to navigate with the customer, regulators and even employees who are law abiding and process friendly, public bureaucracy is very effective, and the government encourages forward looking initiatives like digitization. The government spends money and encourages business to do so (Quah, 2018).

The key metrics of the Singapore Information Technology market are provided below. Total IT spending in Singapore was at 7.4 billion Singapore Dollar (SGD) in 2017 (BMI Research, 2017). This is expected to grow to 9.4 billion SGD by 2021 (BMI Research, 2020).

Item	Hardware	Software	Services
2017 Spending (Billion SGD)	2.40	1.50	3.50
Projected 2021 spending (Billion SGD)	2.50	2.20	4.70
Projected CAGR (%)	0.30	3.30	4.40
For Every 1 SGD spent, the share in 2017	0.33	0.21	0.46
Projected share in 2021 for every SGD spent	0.27	0.23	0.50

Table 1 - Spending in ICT sector in Singapore

The above-mentioned exhibit clearly suggests that there is an increased spending on IT software and services, inferring that the growth rate of IT services is much higher than the other two segments, viz, hardware and software.

Thus, with the current realm of study, the researcher intended to achieve the following research outcome,

To help the IT services firms in Singapore, (especially the smaller firms) which do not have global presence, to identify the key factors that impact their sustainability. The researcher would like to provide guidance and approach based on the experience of managers working within the discussed industry in Singapore. The recommendations to the managers are delineated in section 4.7.

1.5. Singapore's IT services investment in Industry 4.0 initiatives to drive sustainability

Singapore as a country has been a front runner in adopting disruptive technologies to transform both government and businesses. The government is the single biggest customer and driver for both industry 4.0 and sustainability initiatives in the country. In 2021, the Singapore government is estimated to spend S$3.8 billion in ICT products and services, an almost 10% increase from FY2020 (Govtech, 2021).

The Smart Nation initiative launched in 2014 is at the heart of the country's nation building initiative. This government focus on digitisation and transformation has helped drive some key trends for the IT services industry participants (Singapore Government, 2018).

- Government linked companies and agencies have played a pivotal role, they have built their own capabilities as well as partnered with the private sector to help realise the nations ambitions. Some examples include:

  - GovTech, a specific government agency, was officially launched to help realise the Smart Nation Possibilities (Singapore Government, 2018).

  - Artificial Intelligence receives special attention with over S$500 million to be spent to accelerate the adoption in public sector (PMO Singapore, 2019).

  - SME participation is enhanced by the government initiative to ensure they are able to participate and compete effectively in close to 83 percent of the total potential procurement opportunities. In 2019, SMEs

were awarded 70 percent of all government ICT contracts (PMO Singapore, 2019).

- GovTech, is the lead agency for procurement, data protection and security for all government agencies. It has a development team of its own while it also works with other vendors for the delivery of services. It has formulated a new procurement framework for the industry to supports the needs of industry 4.0 programs (Jie, 2019). These three specific changes include:

  - From outsourcing to co-developing

  - Dynamic contracts to improve collaboration and provide flexibility

  - Integrated and inclusive call for solutions through crowdsourcing and outcome based.

All these developments and the initiatives provide significant opportunities for IT services firms in Singapore (Jie, 2019). Further, Singapore serves as a regional hub for many of the global IT services organizations. These initiatives propelled the creation of many Innovation Centres in Singapore to enable the IT services organizations showcase their capabilities to regional clients.

1.6. Rationale for the study

The purpose of this exploratory study was to identify the perceptions of managers on contributing factors to sustainability of IT Services firms in Singapore. Such perceptions were important as the business environment within the IT services sector is highly turbulent today.

This study sought to understand the thought process of the managers and the way IT services firms, that are essentially technology innovators, apply purposeful intent to managing sustainability of performance within varying levels of turbulence in the external business environment.

The study intended to explore and explain the ways in which sustainability of performance was influenced by various factors of organisations' relative emphasis on strategic competitive advantage, risk management procedures and operational effectiveness, and the influence of its dominant leadership approach, primary culture type, and organisational structure. The concept of the term sustainability isn't focusing merely on saving the environment. Sustainability is a broader term that focuses on economic development along with saving the environment (Longoni , 2014). It aims at realising three dimensions of sustainability viz. economic , environment and social dimensions. The focus of the study was to evaluate the performance of IT services organisations across all the three dimensions mentioned above.

This study aimed to identify the key factors and described the levels of sustainability of performance for IT Services organizations in Singapore based on the perceptions of the managers. Finally, this research provided a conceptualised model that could potentially serve as a working guide for the managers of IT Services organisations and effectively provide them with possible contributing factors influencing the sustainability.

1.7. Aim and objectives of the study

As described above, few studies have considered sustainability for IT Services organisations in a turbulent business environment. Thus, to fill the research gap, the researcher decided to consider the perceptions of managers and draw from their past experiences to identify some key characteristics that influence the sustainability of Information Technology Services firms in Singapore. Thus, in coherence with this line of thought, the following are the aim and objectives of the current study.

1.7.1. Aim:

To investigate the key factors that influence perceptions of managers impacting sustainability of IT services organisations located in Singapore

1.7.2. Objectives:

- To analyse the literature to identify the contribution of IT services sector to Singapore economy, including contribution of government policies to IT services sector and available models to assess the impact of various factors on organisations.

- To identify the key factors that may influence the sustainability of IT Services organisations in Singapore.

- To determine the factors that influence the perception of managers employed in the IT services organisations in Singapore.

- To make recommendations on the relevant factors that influence the perceptions of managers on the sustainability of IT services organisations in Singapore.

1.8. Structure of the thesis document

The thesis document is organised into the following sections

- Abstract

- Acknowledgements

- Contents (chapters, figures and tables)

- Chapter 1-Introduction

- Chapter 2-Literature Review

- Chapter 3-Research Methodology

- Chapter 4-Analysis, Discussion, Findings and Management Recommendations

- Chapter 5-Conclusion

- Appendix 1- Abbreviations

- Appendix 2- References

- Appendix 3- Interview approach and semi structured interview questionnaire

- Appendix 4- Selected Interview transcripts

- Chapter one explains the outline of the research. This chapter includes a brief explanation of the research background and provides rationale for the selection of the research area. Moreover, the first chapter contains an explanation of the research aim and objectives and comprises structure of the research.

- Chapter two constitutes a literature review, and accordingly, contains analysis of models and theoretical frameworks that have been previously discussed in the research realm. Viewpoints of other authors regarding the same have been presented in a logical manner in this chapter. Furthermore, this chapter contains definitions of main terms and explains search strategy for the secondary data.

- Chapter three addresses methodology. The chapter explains the research process and addresses the issues of research philosophy. Moreover, the methodology chapter contains explanations of research design, and the choice and implementation of data collection methods. Sampling aspects of the study and discussions of ethical considerations are also included in this chapter.

- Chapter four contains presentation of the primary data collected through semi structured interviews. Presentation of primary data findings has been facilitated through word cloud diagrams and conceptually clustered matrices. Brief discussions have been included to explain each chart. It also elucidates on discussions, findings and management recommendations. This chapter plays a critical role in the achievement of research aims and objectives. Findings of the literature review have been compared to primary data findings in this chapter, and in-depth discussions have been provided in relation to each individual research objective.

- Chapter five concludes the work and summarises the level of achievement of research aim and objectives. This chapter also highlights the contribution of this research to academia and practice. The chapter comprises acknowledgement of limitations of the study and highlights scope for future studies in the same research area.

1.9. Chapter Summary

In this chapter, the researcher introduced the research topic and provided the rationale for selecting this topic for his DBA programme. He also performed sectoral analysis of the IT services sector with a special focus on Singapore and some of its unique characteristics pertaining to IT services.

The topic of sustainability and its relevance for IT services was addressed as well. The aims and objectives of the research project have been delineated in this chapter. Finally, the structure of this thesis document was explained with the coverage areas of each chapter highlighted. In the next chapter, the researcher will analyse the literature and theoretical models relevant to the research topic.

2. Literature Review

2.1. Introduction

The previous chapter outlined the background to this thesis along with the research aim and objectives. This chapter provides a review of the conceptual and empirical research literature and theories that are relevant to the research topic.

The chapter also contains a critical analysis of the most noteworthy contributions of select authors to the research area. The literature starts with the explanation of the search strategy for the literature. The literature review also addresses classifications of the major approaches to the issue of sustainability. The possible contradictions in the research are also highlighted in this chapter. Moreover, major models and theoretical frameworks in the field of strategies such as DeLone and McLean Model for Information Systems Success (1992), Edward Lorenz's chaos-complexity theory (1969), Barney's resource-based theory (1992), Markowitz's portfolio theory (1952) and a few other concepts have been analysed in reasonable detail. The focus of this analysis was primarily targeted towards the sustainability of IT services organisations. This literature review was completed by identifying and explaining a gap in the current pool of literature that the current research exercise attempted to eliminate. The researcher followed the approach suggested by Dudovskiy (2019).

2.2. Literature review approach

IT Services is an applied discipline that is driven by rigor and relevance (Lee, 1999), it is incumbent upon IS academics to understand the nuances of IT services and inform the wider IS community and practice.

To date, research focusing on IT Services has been limited; very few articles exist in mainstream IS journals and conferences. However, more than 150 IS papers refer to IT services, suggesting its relevance to the discipline (Miskon, 2011). Moreover, a review of some papers suggested that the understanding is narrow with respect to what IT services are, why IT services are adopted, who are involved, and how things are evolving? These fundamentals require attention in order to advance our understanding of IT services and develop a theoretical base (Keen, 1980). This may also open the way for IS research to contribute significantly to the IT services domain, in a manner similar to how IS research has been prominent in the outsourcing domain (Khan et al. 2010). Beyond academe, there is a need for clarity in practice, anecdotal evidence suggesting that many organizations have difficulty understanding the context and details of IT services (Singh, 2006).

Though industry reports have been useful, these are typically limited to trend analysis or narrative descriptions of the journey from the IT services concepts. The researcher performed a comprehensive archival analysis of IS literature on IT services. Guided by Oates (2011), his main areas of focus were: (1) to methodologically collect, analyse, and synthesize all possible related literature within this domain; (2) to understand its current status and trends;

(3) to provide a firm foundation to the fundamental understanding and characterization of IT services through the sustainability (performance) lens; and (4) to derive a research agenda to guide the current research around sustainability discipline, including the identification of potential theoretical bases and guidelines.

The researcher opined that there is much need for further research in this area. Since the area of Information Systems (IS) research which is Singapore specific is still emerging and new, the number of relevant articles were quite limited for literature analysis.

So, the researcher continued the search at a broader level and look for, adjacent areas and obtained a pool of highly relevant and moderately relevant articles and started focusing on the sections that specifically address the area of research. The search strategies indicated by Miskon (2011) were very useful to formulate the above-mentioned approach.

2.3. Explanation of search strategy

The researcher searched various key words starting from Sustainability, IT Systems, IT Strategy, IT organisations/firms/companies, IT market, ICT policies in Singapore, Strategy for services firms, IT firms in Asia and many more. After the initial few searches and analysing the relevance of the results to the research subject, researcher found the following databases to be generating the most relevant journal articles,

- Computer and Information Systems Abstracts

- EBSCO Information Services

- ProQuest Dissertations & Theses

- ScienceDirect

- Passport GMID (Global Market Information Database)

- Library Science Database

- Library, Information Science & Technology Abstracts

The researcher also expanded the search with multiple stings across different internet search engines like Google including Google scholar. The search strings provided below were utilized and the same were continually refined.

The researcher also looked into the analyst archives of reputed IT services firms for specific strategies and focus areas around sustainability.

The following table provides an overall summary of the search strategy and the different attributes associated with the same. Furthermore, prior research about IT professional, policies of organisations, training opportunities, and the internal organisational factors that generally analysed important for the development of the organisation was performed.

Item	Explanation
Long list of Key areas considered	Professional services, Information Technology, Information and Communication Technology, Survival Strategy, Crisis Management, Organisational risk management, Singapore IT Services, Organisational Resilience, Global Challenges for IT Organisations, Competitive strategy for IT Organisations, ICT Policies in Singapore, Organisational Sustainability,

Item	Explanation
	Competitive strategy, Organisational strategy, Organisational skills and capabilities, Organisational Quality consciousness in relation to sustainability.
Key areas finally considered	• Professional Services sector • Singapore ICT Policies, Organisations in Asia and Singapore • Organisational resilience and competitive strategy • Global challenges for IT Organisations • Organisational Sustainability • Corporate Sustainability • Organisational culture, productivity and sustainability
Key Theoretical frameworks that are shortlisted	• DeLone and McLean Model for Information Systems Success (IS Success Model) (1992). • Edward Lorenz's chaos- complexity theory (1969). • Markowitz's Portfolio Theory (1952).

Item	Explanation
	● Barney's resource-based theory (1992).
Broad disciplines the research will depend on	● Strategy and Management ● IT/IS organisations ● Services Organisations ● Organisational change management ● Organisational Risk management ● IT Project Portfolio Management ● Financial strategies of IT services firms

Table 2 - Literature search strategy & approach

2.4. Analysis

As introduced in chapter 1, sustainability is a recent and a comprehensive issue for the economy, the companies, and the population, being considered a systemic concept (Buys et al. 2014).

The concept of the term sustainability doesn't simply mean that the environment should be saved, it is a broader term that focuses on social and economic development along with saving the environment (Longoni , 2014). Sustainability encompasses three specific dimensions viz. economic dimension, environment dimension, and social dimension. Economic dimension refers to the fact that monetary benefits are essential to adhere to an individual because without its survival is difficult.

The dimension of the environment refers to the fact that saving the environment is necessary for humans to live. Social dimension refers to the fact that society is a connecting cord between economy and environment.

If there is an imbalance in any of the above, sustainable development cannot be achieved (Bansal, 2014).

Sustainability is a manner of an organisation planning and acting to achieve the indefinite maintenance that can fill their needs and express their greatest potential in the present (Lee, 2012). Sustainable development aims at the utilization of resources at its optimum level. It adheres that raw material extracted from nature is wasted if it is not efficiently utilized to its fullest (Longoni , 2014).

Thereby, from an economic point of view, the optimum utilization of resources leads to a reduction in cost incurred in using the raw material.

On the other hand, from a social perspective, the raw material that is available presently will not become extinct and will be available for consumption for future generations as well. In turn, the future generation too will be able to gain from the sale of the same raw material. The overlapping benefit of it will save the environment in return. Thus, sustainable development encompasses various other dimensions of economic, social and environmental benefits together (Michelsen et al. 2016).

Most of the literature that was analysed on the sustainability of organisations alluded to three domains of sustainability (also being referred to as triple bottom line-TBL) viz. social, economic and environmental sustainability.

TBL concept is the most common framework utilized in the management field to conceptualize various aspects related to the organisational sustainability (Bansal, 2014).

It is revealed that certain governance mechanisms help in fostering the benefits of Triple Bottom Line (TBL) performance, but it is not necessary that the sustainability aspect will fit in all models (Hussain, 2016).

Organisational sustainability can be construed as a company's activities that contribute to the economic, social, and environmental domains of sustainability by meeting stakeholders' needs in the present without compromising the requirements of future generations (Carroll, 2014). Schaltegger (2011) pointed out that the concept of sustainable development is gaining momentum in the corporate world. Barth (2012) & Blödt et al (2012) also alluded to the concepts of sustainability finding their way into the academic curricula and the prominence of Education for Sustainable development (ESD). Hesselbarth (2014) clearly delineated the need for integrating sustainability principles into the business environment.

Hidalgo & Fuentes (2013), Osagie et al (2016) and Brundiers et al (2020) emphasized the importance of knowledge and competence around sustainable development and the progress made so far on this front.

Le Deist & Winterton (2005) raised further questions regarding the conceptual nature of these studies.

The concept of Triple Bottom Line (TBL) is debatable, environmentalists pursue that companies should not focus solely on the economic bottom line itself, but their attention should be in proportion to the other two also.

Environmental and social bottom lines should also be aimed at along with financial aspects (Hussain, 2016). This concept gained importance over the years. It has now become an integral part of both the concepts of Corporate Social Responsibility and sustainable development which were considered as important aspects over the years. These aspects were regarded as the subject of criticism as the application of each of them resulted in losses to the companies.

Sustainable development was regarded by businessmen as the concept of saving the environment solely as its aim and it was labelled as "*Greenwashing*" (Raworth, 2012). While the concept of Corporate Social Responsibility (CSR) was considered vague. Presently, CSR is just not confined to conducting activities for the purpose of welfare in the society alone, it is also regarded as a medium of a branding tool for companies. CSR activities just like Sustainable Development did not adhere to direct monetary benefits to the companies but do help in branding and marketing indirectly. In turn, social and environmental gains are complementary in the process (Rodriguez, 2018).

Global economic development has enhanced the quality of life and wellbeing of billions of people. However, inequality is rising, conflict and insecurity are a constant concern, ecosystems are being degraded, resources depleted, and greenhouse gas levels are climbing. These trends are detrimental to communities, environments, businesses and long-term economic prospects (Hesselbarth, 2014). If some simple measures are taken to align the economy with sustainable development, it need not be this way (University of Cambridge, 2015). It is advisable that organisations create the enabling conditions for sustainable business by adopting the SDGs: the conditions that, if present,

would encourage capital to flow into sustainable business models (Shanmugasundram, 2018).

The role of ICT in speeding up economic growth has been empirically established in the context of several mature economies. This high degree of growth can be attributed to the increased demand in the IT services sector primarily due to the additional investments various organisations across multiple industry sectors are making on the IT services (Das, 2015). Also, there is an increased volatility in the system.

As the amount of investment grows, there is an imbalance between the supply and demand, this meant that the resources who were employed in this industry had quite a few choices to pick from. This also resulted in organisations providing faster career progression to the resources as well as higher pay hikes on a regular basis, although this trend was corrected occasionally (especially during 2008, and 2012), in general the skilled resources have been bestowed with good pay hikes (IDC Market Research, 2016).

The engagement with IT services organizations can happen either on a time and material mode where the customer is charged for effort spent by the IT services firm or fixed price, where the customer is charged based on the deliverable/outcome. The primary difference between the two approaches is the party that owned the risk. For time and material, it is the customer and for fixed price, it is the IT services firm (Patel, 2017).

Moreover, it is also found that sustainability transitions are a persistent and large-scale societal challenge for all the sectors in the economy (Loorbach, 2017).

Besides this, transitions are also considered as a long-term complex procedure that plays a role of multi-actor in the process of societal sustainability while changing the fundamental cultures, practices, and structure (Frantzeskaki, 2009).

Different organisational theories clearly defined critical organisational activities necessary for organisational sustainability.

Much of the literature on Information Services emphasizes the value provided by the IT artifact or focuses on communication between IT and business management, rather than on the role of IT professionals inferred by critical survival activities outlined in different organisational theories (Kaarst-Brown, 2000).

For analysis, four theoretical models were taken. As a structure for analysis, every model was first explained with the references. The researcher's view of how the model was relevant for the chosen research topic was also provided.

2.4.1. DeLone and McLean Model for IS Success

2.4.1.1. Introduction to the theoretical framework

DeLone and McLean (D&M) reviewed the existing definitions of Information systems (IS) success and their corresponding measures and classified them into six major categories. Thus, they created a multidimensional measuring model with interdependencies between the different success categories (DeLone, 1992). In 2003 the model was further updated by the original authors. There are six measures that determine the success of any IS system (DeLone, 2003). Bahaddad (2017) analysed how this model adopted structural equation modelling for the analysis of six dimensions.

Each measure mentioned below can be further divided into sub measures. Many researchers studied the D&M IS model and employed different methods to build sub variables to the below mentioned variables and determined the impact of these variables in different conditions on IS success of organisations.

The six measures are as follows (DeLone, 1992),

- System Quality- Measures that focus on usability aspects and performance characteristics.

- Information Quality- Measures that focus on the characteristic of the output generated.

- Service Quality- a set of measures that determine the accuracy, adequacy, relevance, and reliability of the specific IS system.

- Intention to use- the degree and way IS system is utilized by the end-users. This may also be affected by the perceived ease of use by the end-users of the IS System.

- User Satisfaction- User's level of satisfaction. In general terms, satisfaction refers to the extent to which a customer is happy, content or pleased with the end results of a product or service.

- Net benefits- The extent to which the IS system is contributing to the success of different stakeholders.

Several authors analysed the D&M IS model, Urbach (2009) in his analysis concluded that the D&M IS model is the most widely used theoretical model in the Information Systems research. This theoretical model has helped several researchers develop different success models in the IS space.

Several researchers have applied the D&M IS model, evaluated some IS projects and added additional measures like process quality and collaboration quality (Urbach, 2010).

2.4.1.2. Applicability of the model.

D&M model was the single most heavily cited article in the Information Systems research as confirmed by many authors (Lowry, 2007). The researcher believes that analysis of this model should be the first step towards starting the literature review in the area of IS research.

While the above-mentioned model is specifically applicable for IS projects, the researcher believes the same can be adopted to determine the effectiveness of the IS organisations.

The same set of measures and sub measures can be possibly employed to measure the effectiveness of the organisations that deliver IS services. Sustainability is the ability of a subject to remain alive, relevant and continue its existence (Hussain, 2016).

IS organisations will sustain only if their output is meeting the expectations of the end users on a consistent basis (DeLone, 2003). One of the important variables that can be selected from this model is the focus on service quality which is one of the variables that determines sustainability of the IT services organizations (DeLone, 1992). Hence the researcher considered this model to be highly relevant for his research.

2.4.2. Edward Lorenz's chaos- complexity theory

2.4.2.1. Introduction to the theoretical framework

Internal and external environment where organisations execute their activities, have a structure that changes continuously (McMillan, 2004).. An organisation must adapt to this structure which causes unexpected, undesirable and sudden results (Mason, 2009).

How organisations behave during this period is stated in chaos-complexity theory (Zekai Öztürk, 2017). Chaos Theory, one of the theories having come into prominence in organisational studies, is an approach which allows individuals to look at the environment they live in a different way (Oxfam, 2017). Complexity theory suggests that some systems with many interactions among highly differentiated parts can produce surprisingly simple and predictable behaviour while others generate a behaviour that is impossible to forecast (Anderson, 1999). Chaos and complexity theory suggests one aspect. It challenges the fact that more chaotic and complex the organisations are, more difficult it is to predict their behaviour (Mason, 2009). This isn't true in many cases. Some very complex organisations show a very predictable behaviour (Morrison, 2008).

In both these theories the fact that everything is constantly changing, that change is immutable in a developing world, and that organisations must adapt to such changes has been questioned (McMillan, 2004). Bloom (2000) analysed how this theory impacts the thought process of individuals trying to grasp the idea of an organisation.

The chaos and complexity theory of Lorenz curve is concerned about the behaviour of nature and the resulting change in it.

The theory has its application in wider domains other than the weather as well. The theory suggested that even some small changes in the environment, that are relatively irrelevant to even notice, can have radical and unpredictable consequences (Sarah, 2004). In the same way, a certain insignificant change in the organisation can lead to unpredictable changes in the behaviour (Nordtveit, 2010).

Complex Adaptive Systems (CAS) comprise many agents. These agents behave according to their own perspectives or rules. Thereby, to avoid creating chaos in work each agent is required to adjust its own behaviour to certain guidelines that are universal among these agents. These guidelines are not developed and monitored by third-party instead are constructed based on the local interactions that they share among themselves (Mason, 2009).

As discussed above, CAS are self-organizing. They are not developed pertaining to any guidelines drawn instead of self-driven through interactions among local agents (Burnes, 2005).

CAS is an important concept that represents the complexity theory. This provides an important way of modelling complex organisations.

CAS's comprise a large number of independent variables whose behaviour is not dependent on other variables. Although these variables are independent they are interacting variables (Mason, 2009).

It is assumed that those variables that fall under this intermediate zone of adaption exhibit the productive, complex and progressive change (Brown, 1997).

Zekai Öztürk (2017) delineated three key features of Complex adaptive organisations,

- Having learning skill- To adapt itself to the environment the organisation is operating in

- Being in interaction with – Interaction between different elements results in the complex behaviour of the organisation

- Having learning experience- To learn from the events and adapt itself for the future events

All the above three attributes result in an important attribute called "*Self-Organisation*". This is the feature of complex adaptive systems/organisations. Self-organisation is a very important feature for the sustainability of organisations (Zekai Öztürk, 2017).

Zekai Öztürk (2017) argued that the key features of the chaos-complexity theory were as follows,

- Non-Linearity and unpredictability- It is an accepted fact that minor events cause minor effects and major events result in major effects. But this isn't an accepted fact in chaos-complexity theory. The butterfly effect is the key that explains this phenomenon. A minor and insignificant change in a complex structure will result in un precedented changes in the system. Edward Lorenz stated this situation as that a butterfly fluttering in Beijing may cause a storm in New York in the next month.

- Dependence and mutual interaction- It states that particles/units of complex structure are dependent on other units and are in constant interaction with the other constituents of the system.

- Self-Organisation- This feature is that a group coming together to perform any task defines what will be done and where and when it will be done by itself Mitleton-Kelly (2003) highlighted the same.

- Planning, designing and impossibility or pre-determination-Order occurs automatically without planning and external intervention.

- Edge of chaos-In the organisations based on open systems, organisations will be in an irregular position when they are far from equilibrium. A new order will take place of this irregularity after a while and irregularity takes place again during this period (Mitleton-Kelly, 2003).

- To move away from equilibrium- It is mentioned that in the complexity theory based on open system approach, system performs under some conditions far from equilibrium because of energy, material and information exchange.

- Positive/negative feedback-As positive feedback means convention, refreshment and increasing degree of influence, negative feedback means finding the balance, ordering and nothingness in unstable conditions.

2.4.2.2. Applicability of the model

Chaos-Complexity theory brings quite a few important concepts to the fore on sustainability. Although this model does not directly talk about sustainability of organisations. One of the relevant concepts is the principle of self-organisation. This is certainly important for this research.

The aspects like equilibrium, non-linearity and unpredictability and dependence on mutual interaction are relevant to IT services organisation. The research is of the opinion that this is a very important theory to assess the sustainability of an organisation.

2.4.3. Markowitz's portfolio theory

2.4.3.1. Introduction to the theoretical framework

Nobel laureate Harry Markowitz demonstrated mathematically why putting all eggs in one basket is an unacceptably risky strategy (Markowitz, 1991). He was the first to look for diversification (Bernstein, 1996). The ideas of Markowitz are still being used as a reference for discussions, debates, as well as for the development of financial theories that are used in different subject areas, such as in Information Systems (IS) (Kauffman, 2008).

The portfolio theory has influenced many works within the area of Systems Integration, mainly the analysis of risks and returns of IT investments. This subject so studied in the area utilised the key concepts and variables of the theory to assist in studies and research to better understand and explore the subject (Kumar, 2008). From the 1970s onwards, portfolio theory began to be used in information systems, intensifying its usage and application during the 1990s (Schneberger, 2012).

It suggests that assembling a few assets i.e., making a portfolio helps in maximizing the expected return for a given level of risk. It aims at diversification of assets while investing. Diversification of funds in different kinds of financial assets helps in reducing risk because there is volatility in assets. Investing in one single asset is subject to greater market risk and thereby, investing in

different assets helps in maintaining a balance between profits and loss (Markowitz, 1991).

The technique helps in hedging risk. Currently, mutual funds work on the same phenomenon as proposed by Markowitz (1991). Kellner (2019) built an approach towards developing optimal portfolios.

The theory began to be used in the IS area in a more constructive way, where more elaborate systems are structured to measure and analyse the trade-off between risks and returns involving decision makers.

Because of all the research, the concept of Information Technology Portfolio Management (ITPM) took shape (Kauffman, 2008).

This is focused on analysing the value of IT investments that an organisation is making from a strategic perspective (Jeffery & Leliveld, 2004). Moreover, a concern regarding examining IT projects and how to prioritize them by selecting and maximizing the results of IT investments has come up, which results in greater interest in the processes of project portfolio management (PPM).

ITPM is the application of procedural management. It refers to systematic alignment to investments, activities, and projects concerning the departments of (IT) Information Technology. ITPM would include planned initiatives and activities, projects and already running IT products and services (Kumar, 2008).

ITPM aims at quantification of priorly informal IT efforts that assure measurement and attaining an objective evaluation of investment scenarios (Bernstein, 1996). ITPM initially developed around a project-centric bias. Slowly and gradually, it is evolving by incorporating steady-state portfolio entries (Markowitz, 1991).

ITPM is defined as the management of IT as a portfolio of assets similar to those of a financial portfolio, with the purpose of improving the performance of the portfolio by balancing the risk and return of different investments (Jeffery & Leliveld, 2004). It is a continuous process of managing IT investments, applications, and infrastructure assets, and their interdependence, to maximize benefits, minimize risks and costs, and ensure alignment with long-term organisational strategy (Stewart, 2008). The portfolio theory has influenced two major streams in the area of IS about ITPM.

- Analysis and classification of IT investments in different dimensions

- Analysis and classification of IT projects

In summary ITPM provides the necessary framework and tools to monitor their IT investments for their benefits and the associated risks to determine their level of contribution to the organisational performance. The idea was to separate out the IT investments into different dimensions (Stewart, 2008). A lot of research was done in this area of categorization.

Several dimensions were generated; however as purported by Weill (1992), the most accepted dimensions were as follows.

- Infrastructure- The basis of the portfolio, providing the framework for IT shared services (primarily the equipment or hardware that is utilized in IT projects).

- Transactional- Represents expenses and investments to support the daily tasks and operational organisation, such as orders, requests, inventory control and many more.

- Informational- Represents the investments to improve the availability of information for management and control of the company, supporting the decision making, planning, communication, accounting, and analysis.

- Strategic- Comprises investments to reposition and maintain the organisation's market. Investments in this dimension typically alter the nature of IT services and organisational processes in industry.

The IT investment in the above-mentioned dimensions has different risk and returns. The strategic dimension has high risk and huge potential for higher returns, the infrastructure dimension has moderate risk and return, due to long life and business and technical uncertainty.

The informational dimension has moderate risk and return due to the difficulty of acting on information to create business value, and finally, the transactional dimension has the lowest risk with solid return of 25–40%. A quantitative approach for ITPM was proposed, where organisations can obtain a corporate-wide impression of the state of their total IT portfolio.

The researcher decided to combine the infrastructure and informational categories into one category- transformational projects

Tyssen (2014), Wiek (2012) and Shenhar (2004) analysed the key characteristics of transactional, transformational and strategic projects.

IT costs spent today project into the budgets of tomorrow, how to assess important risks residing in an IT portfolio, and to explore what-if scenarios for future IT investments. Moreover, this quantitative approach enables assessments of proposals from business units, risk calculations, cost comparisons, and estimations of total cost of ownership (TCO) of entire IT portfolios (Verhoef, 2002).

ITPM is utilised to assist managers of both business and IT on the issue of asset management and IT services (Kumar, 2008). The division of investments made in three dimensions (transformational, transactional, and strategic) helps IT managers to better manage their IT resources, examine the risks and return, besides providing greater visibility of the area to the organisation.

With the increase of competitiveness and volume of information available to organisations, many variables must be considered when making investments in IT. Thus, ITPM can be used to analyse these investments as IT projects contain different information, and therefore, risks and returns. Thus, activities such as analysis, prioritization, and selection of projects that are more aligned with business objectives can be realized (Wiek, 2012).

2.4.3.2. Applicability of the model

Markowitz's Portfolio theory brings in a strategic significance to the organisations. The concept of IT Portfolio Management is very relevant for IT services organisations. One of the key challenges that the IT service organisations are confronted with is the shortage of skilled resources in the organisation and the market (Verhoef, 2002). IT service preorganisation's can utilize the dimensions of ITPM to determine which projects they are executing for their customers are of strategic value. This will help these organisations to balance their resource distribution across projects. This theory is certainly relevant to the organisational sustainability. Markowitz theory in practice is not just used the way it was conceived; many researchers have been able to derive a lot of more sophisticated uses from it. When it comes to IT, it can certainly provide tools capable of assisting managers on their decisions (Kumar, 2008).

2.4.4. Barney's resource-based theory

2.4.4.1. Introduction to the theoretical framework

In 1991, Barney examined the link between resources and sustained competitive advantage (SCA), where he found four empirical indicators for resources to generate SCA: value, rareness, imitability, sustainability. His focus merely was on the strategic management field rather than the Information Systems (IS) field (Barney, 1991).

This has given birth to a new theory by name RBV- Resource Based View. Based on RBV, organisations are basically composed of a set of specific resources and the ability of an organisation's management in combining the resources enables it to address market opportunities which contribute to the performance and sustainability of an organisation (Barney, 2001).

Hitt et al (2001) observed the connection between entrepreneurship and the RBV theory.

The RBV is a managerial framework. It helps in determining the strategic resources a firm or an organisation can exploit in order to achieve a competitive advantage that is sustainable. RBV suggests that firms have a heterogeneous nature (Hitt et al. 2001). It is so because they possess heterogeneous resources. Heterogeneous means a mixture of many things in one aspect. When a firm is heterogeneous in nature, it means it possesses different strategies as they have access to a mixture of different resources (Piccoli, 2005). The RBV approach aims at managerial attention with respect to a firm's internal resources.

Thus, to outline those assets, competencies, and capabilities so that they can deliver superior competitive trade advantages. In the RBV approach, strategists and analysts select a strategy that helps in maintaining a competitive position. This competitive position will focus on serving the best strategic position for exploiting internal resources (Ravichandran, 2002). It also focuses on identifying capabilities that adhere to external opportunities. Strategic resources showcase a complex network of interrelated, mutually coordinated assets, and capabilities.

Therefore, firms that adhere to these strategic positions can adopt different kinds of competitive positions and choose among them the most suitable (Ravichandran, 2002).

When a firm is viewed as a set of resources, either IT resources (such as IT infrastructure, IT development, IT technical skill, and IT-business relationship) or non-IT resources (such as organisational, technical, and business), one resource could have effect on another resource. It seems that change in resources is inherently unavoidable during the time.

Resource impressionability plays a paramount role on the result of outcome (Bharadwaj, 2000). Resource impressionability or resource complementarity refers to how a change in one resource might have a change in another resource. It is argued that resource impressionability could be divided into three possible effects: compensatory, enhancing, and suppressing (Black & Boal, 1996). When a change in one resource is rectified and countervailed by another resource, compensatory effect can be perceived. When one resource increases the impact of another resource, enhancing effect can be perceived.

When the existence of one resource can decrease the influence of another, the suppressing effect will come to the fore. RBV has been widely used in the IS field (Bharadwaj, 2000).

The previous IS research related to resources, performance, and Competitive Advantage (CA) is influenced by RBV. A firm can be viewed through a collection of resources and capabilities enabling the firm to continue its life. The RBV argues that a firm possesses a collection of resources that may lead the firm to enhance its CA, depending on the characteristics of resources (Barney, 1997).

It is proposed that CA generally can be generated and sustained through unique and distinguishing resources that may be durable, rare, appropriate, non-substitutable, immobile or imperfectly mobile, difficult for others to imitate, and have value in the firm's environment and marketplace (Birkinshaw & Goddard, 2009). CA generally refers to unique and distinguishing resources that may be durable, difficult for others to imitate, and have value in the firm's environment and marketplace (industry) (Birkinshaw, 2009).

There are many well-known strategies proposed to attain CA. Porter proposed the generic strategies of differentiation and cost leadership (Porter, 1985).

Firms applying these strategies either distinguish their products from the competition by offering something unique and difficult to imitate, or sell at the lowest cost, attract significantly more customers than competitors and thrive on the volume of sales generated. According to Porter (1985), these twin strategies also have a dimension of focus, or competitive scope. Firms that can identify their niche, and either win on differentiation or cost leadership, will have CA.

The factor of time also cannot be ignored. Firms can often secure leadership positions in a new market by entering the market early, combined with a forward-looking approach to pricing that places high barriers of entry for potential market entrants. This is known as the first-mover advantage (Porter, 2001).

Looking inward, CA in one industry can be strongly enhanced by interrelationships with firm units competing in related industries (Powell, 1997).

Many CA types are unsustainable, as competitors will eventually attempt to catch up with the firm holding the advantage.

A sustainable CA is possible when other firms cannot duplicate what the one holding the advantage has been able to do. It is an advantage that enables business to survive against their competition over a long period of time (Wade, 2004).

The three attributes of resources that help an organisation create or attain CA are value, rarity, and appropriability. The three attributes of resources that limit an organisation's ability to sustain CA are imitability, substitutability, and mobility (Wade, 2004).

Although many extensions and elaborations of RBV have been published over the years, to a considerable extent, most of them identified critical resources and investigated the impact of resources on competitive advantage (Dwivedi et al. 2012).

Capability is another term which is used widely in RBV. Most researchers concern "*the ability of the firms to perform an activity (be it static, dynamic, or creative) more effectively than competitors with otherwise similar resource endowments*" (Barney, 1997).

Besides the concept of capabilities, capability development has been also addressed in the literature that was studied. It has been stated that capability development is a gradual process where the historical context and situation that the organisation has experienced have a systemic and emergent influence on the subsequent development process and the resultant developed capability (Mason, 2018).

Although the development of capability is path dependent, it does not necessarily imply that there is only one path that the development of a specific capability must undergo. One of the approaches that best describes systems' dynamics of development, and that addresses issues of their sustainability, is complexity theory (Mason, 2018). Complexity theory was also highlighted as one of the important theoretical models for this research.

RBV provides a theoretical lens for IS to investigate how IS resources and capabilities can contribute to firm strategy and performance. Moreover, it lays a basis for discussion of IS resource and non-IS resource interaction and, thus, the possible influence on Competitive Advantage (Ravichandran, 2002).

One of the earliest studies on IS resources was by Ross (1996). He categorized IS resources into human resources such as IT skill, problem-solving orientation, business understanding; technology resources such as hardware, software, databases, system architecture, servers, standards; relationship resources such as IS-business relationship, top management support, risk management, and responsibility. Moreover, application of RBV shifts the emphasis of the entrepreneurship research from the recognition of the opportunity for transforming homogenous output and heterogenous output from the sources of wealth creation (Angus, 2019).

2.4.4.2. Applicability of the model

RBV theory is significantly relevant to the research subject and the aspect of "*sustainability*". Competitive Advantage (CA) will be the key for a firm to continue their operation and be sustainable. CA can certainly be looked at as one of the key factors that influences the sustainability of the firms.

As mentioned above, there has been a considerable amount of research performed on the applicability of the RBV theory. Also as elucidated above, capability is another factor that can be of great influence for the sustainability of the IT services firms. Capability development for sustainability of an organisation is an area that is addressed by the complexity theory. Capability is highlighted as one of strategic differentiators of any organisation by many theories and this is probably one of the most relevant differentiators of an IT services organisation that depends on the capabilities of the individuals who form a part of the organisation. Hence this this theory is relevant to the sustainability of IT services organizations.

2.4.5. Other concepts

In addition to these concepts, the researcher also looked at some new concepts that emerged through the semi structured interviews

- Brand value and its correlation with sustainability was one of the areas that emerged through the interviews. Loh and Sharmine (2012) purported this theory specifically in the context of Singapore. Gidwani, (2013) & Mun (2020) extended this correlation to the other industries as well. Broyles et al (2009) drive home the evolution of brand equity. Worm & Srivastava (2014) highlighted the importance of positive brand value on prospering customer confidence.

- Psychological safety was another area that surfaced through the interviews. The analysis from Tan and Smith (2018) was taken into consideration. Carmeli (2008) also talked about commitment and motivation accrued through psychological safety.

Edmondson (1999) & Baer (2003) established a framework that provided the dimensions of psychological safety.

- Industry 4.0 has been identified as a major contributor to the era of digitalisation. Its implications for organizational sustainability have gained widespread attention from the perspectives of the TBL, sustainable business models and circular economy (Sadaf, 2020). Sustainable development in the Industry 4.0 context contributes to circular economic objectives by achieving social, economic, and environmental benefits. TBL studies mainly focus on Industry 4.0 adoption and implementation, sustainable supply chains, smart and sustainable cities, and smart factories (Asiimwe, 2019). Circular economy and sustainable business models as emerging research themes that focus on Industry 4.0 adoption and implementation, as well as organizational sustainability (Braccini, 2018). The researcher discussed the implications of Industry 4.0 in Singapore in Section 1.4. The relevance of TBL for Industry 4.0 is established here.

Apart from the above-mentioned theoretical models, the researcher also analyzed some key theoretical concepts that could have an impact on the sustainability of the organisations. A very brief view of these concepts is provided below

Concept name	Brief description	Applicability
Enterprise Risk Management	All organisations have risk, both from within and from external sources. Many risks are known, fall within the organisation's risk appetite, and are intentionally accepted. They're inherent to the business. But others, when manifested as unplanned and unwanted events, create deviations from the organisation's strategic plan, and the inability to consistently deliver on their objectives (Heuts, 1998). Organisational risks typically disrupt the core value-creating assets, people, and business processes of the organisation and, when they are not effectively	The unique nature of the software services organisations will have a profound impact on the sustainability. Organisations must look at various factors that impact their sustainability. These factors could be both internal and external (Pojasek, 2013). A sound understanding of these factors that are both external (the social, cultural, political, legal, regulatory, financial, technological, economic, natural, and competitive environments) and internal (governance, organisational structure, roles, and

Concept name	Brief description	Applicability
	anticipated and mitigated, create undue volatility for the organisation and its earnings (Pojasek, 2013).	accountabilities; policies and objectives), and the strategies that are in place to achieve them Risk management is important for organisation sustainability for the following reasons • *Risk management creates and protects value* • *Risk Management explicitly addresses uncertainty* • *Risk management should be tailored to drive sustainability of organisations.*

Concept name	Brief description	Applicability
		Enterprise risk management is an important concept that is relevant for the organisational sustainability. In case of IT services firms, many firms (especially small IT services firms) do not have a separate risk management function. The senior management plays the role of a risk manager (Bharadwaj, 2000).
Productivity	Sustainable development of organisations is the concept which became popular to a reasonable extent, but deliberations on the sustainability of employee productivity are still at an early stage (Bansal, 2014). The organisations want to maximize their profit, often without giving a thought on	IT services industry is one area where the average monetary reward for employees is higher compared to many other industries (Powell, 1997). Many researches gave a thought on productivity taking economic, sociologic and psychological

Concept name	Brief description	Applicability
	sustainability of the elements that participate in profit generation. An employee is defined as an economic unit of an organisation (Marinko Škarea et al. 2013). This definition however takes away the humanistic/social element from the mix. Research in this area showed that it is possible to determine the productivity boundary for an individual, such that it will provide maximization of overall utility of economic and social aspect. Since different individuals have unique set of abilities, which form different productivity curves, boundaries should also be individual, given the specific situation. Research proves that it is possible to shift the boundary by	approaches. Considering that the reward for the work is money, many kinds of researches considered the impact of money amount on work and performance. The conclusions point out that motivation by higher payoff is temporary, even sometimes too big amounts lead to a higher stress level which decreases productivity (Marinko Škarea et al. 2013). The researcher's experience suggested that, investment in an employee by professional training, can raise the worker's level of productivity. The worker will be capable for the acceptance of a higher number of work tasks or equal number heavier tasks, in

Concept name	Brief description	Applicability
	shifting the productivity curve due to investment in employee's training and education (Lee, 2012).	other words, his/her productivity will be higher. Thus, employee productivity is certainly one of the important factors. The organisation's investment in human capital, respectively employee's education will be considered firstly from economic and indirectly from a sociologic dimension of sustainable development and will play an important role in organisational sustainability (Bansal, 2014).
Culture	Culture has been acknowledged as a significant contextual stimulus in shaping corporate sustainability practices (Gregory, 2006). For analysing Culture's impact on Organisational	According to Caprar (2012), "culture is the antecedent, or the condition, influencing the adoption of sustainability. Based on project GLOBE, culture is a very important factor that

Concept name	Brief description	Applicability
	sustainability, GLOBE culture dimensions were looked at as a foundational culture framework. Based on data from more than 17,000 managers in over 900 organisations, project GLOBE identified nine culture dimensions, allowing for comparisons between 62 countries around the world (House, 2004). These nine dimensions are future orientation, gender egalitarianism, uncertainty avoidance, power distance, and performance orientation, humane orientation, institutional collectivism, in-group collectivism, and assertiveness. In terms of conceptualizations of culture, most studies use Hofstede's (1980) original four culture dimensions	influences organisational sustainability. Especially aspects like future orientation. Future-oriented cultures are more likely to place a higher priority on long-term success, long-term strategic orientations, and flexible, adaptive managers. Greater future orientation practices have been associated with economic prosperity and societal health (Ashkanasy et al. 2004) and performance orientation are very relevant for the concept of Organisational sustainability of software services organisations.

Concept name	Brief description	Applicability
	(individualism, masculinity/femininity, power distance, and uncertainty avoidance. Hofstede's (1980) framework dominates culture research in international business and management and represents a relevant source for comparative culture research. Harrison (2000) highlighted the importance of progressive culture and the impact that it would have on organisations.	
Innovation	Innovation is a feature of all successful enterprises and essential to provide future growth while remaining competitive and adaptable in a dynamic world. Innovation involves integrating technological, market and organisational Change (Shaun Gee,	Organisational sustainability increasingly focuses on how to manage new knowledge of ideas and practices that can expand the business. Open innovation plays a key role in effective strategic sustainable management

Concept name	Brief description	Applicability
	2017). Drucker advocates that innovation is the *'discipline of the entrepreneur'* and the systematic search for *'windows of opportunity',* which suggests that innovation is a process that can be learned, managed and influenced and reinforced (Drucker, 2001). Innovation in the context of Singapore was analysed by Srivastava (2014). Frugal innovation purported by Ghosh (2007) was also one of the key aspects analysed that will drive the innovation in the IT services organisations.	(Lopes et al. 2016). In recent years the concept of open innovation has become very relevant. This is a model of innovation in which an open environment embraces external opportunities, allowing the organisation to exploit other technologies, ideas, features, strategies, and opportunities. Open innovation is a strategic process of continuous reinvention of the business and for creation of new business concepts (Kian, 2015). More specifically, open innovation proposes an approach to coordinate processes of research, development, and innovation in organisations, based on an

Concept name	Brief description	Applicability
		integrated horizontal concept (Saebi, 2015). This concept is relevant for the sustainability of IT services organisations.
Leadership approach	Leadership for sustainability requires leaders of extraordinary abilities. These are leaders who can read and predict through complexity, think through complex problems, engage groups in dynamic adaptive organisational change and have the emotional intelligence to adaptively engage with their own emotions associated with complex problem solving (Friedman, 2009). Leaders and leadership is a key interpreter of how sustainability of the organisation links to the wider systems in which the	IT services organisations are very complex organisations and the field is such that one leadership style won't be enough (Heathfield, 2019). Leaders in IT services organisations demonstrate different styles of leadership depending on the specific circumstance they are faced with. Literature review suggested that leadership is a very important aspect for organisational sustainability. The approach and leadership style adopted by the leaders will have

Concept name	Brief description	Applicability
	organisation sits, and executing that link well requires unusual leaders and leadership systems (Metcalf, 2013). For the purpose of relevance, four different leadership styles have been considered. The first one is authentic leadership (develop followers towards personal authenticity) and the second one is ethical leadership (try and do the right thing). Third is transformational leadership (charismatic and stimulate intellectually). And the last one is autocratic leadership (coercion and autocratic way of decision making). Leaders need to recognize that the organisations operate in a complex interconnected and dynamic system. This	a big impact on the short term and long-term sustainability of the organisation.

Concept name	Brief description	Applicability
	concept is also advocated by Barney's RBV theory elucidated above (Barney, 2001). Researchers proposed that the new key responsibility of leadership is sensemaking of the external environment as leaders must help the organisation stay aware of and adapt to the rapid changes in its industry and new stakeholder demands (Crossan, 2002). Given this level of complexity, it seems unlikely that a single leader will have enough information to develop correct decisions for the organisation. Some scholars suggest 'shared leadership' as the preferred model (Crossan, 2008).	

Concept name	Brief description	Applicability
Focus on Customer Success	The shift to Software as a Service (SaaS) models has resulted in the most important change of all in the software industry- subscription based licensing (Mehta, 2015). Gone are the days when the customer bought the software licenses and procured services from the software services firms. Consumption based models in the solutions have challenged the position of the IT services firms. Galov (2021) highlighted the proliferation of public cloud into various industries. Customer success is the new philosophy that focuses on maximizing the lifetime value of the existing customers.	Customer success as a philosophy should pervade across the entire organisation. This is one of the most important aspects to be considered by the IT services firms. A firm that maximizes the value derived from the existing customers improves its chances of surviving the disruptions that are affecting the software market.

Concept name	Brief description	Applicability
Financial Performance	Companies with superior sustainability practices have superior financial performance and growth than those companies which do not place emphasis on sustainability (Ameer, 2012).	It is important to identify the key financial parameters

Table 3 - Literature review- other concepts

2.5. Contradictions in the research area

In this section, an attempt is made to identify some areas of contradictions between what is suggested by the theoretical concepts and the phenomenon that is observed by the researcher in his daily life.

Concept	Possible contradictions
TBL Concept	There are three dimensions of sustainability- People, profit and planet, experience suggests most of the organisations today look at one dimension- profit. There are some organisations that look at the people dimension also considering the long-term benefits, in the software world, it is very difficult to find many organisations (especially the small ones) look at the planet dimension of the organisational sustainability.
Risk Management and Innovation.	Open innovation talks about embracing new philosophies and ideas. There is a perception that risk management impedes open innovation. This however isn't true. Risk management protects an organisation's valuable assets and it should work very closely with business. This however in practice isn't followed all the time, depending on the type of the organisation, its leadership and culture, there is always an

Concept	Possible contradictions
	imbalance between the two dimensions. An organisation that has a balanced conflict between risk management and innovation will thrive for success and will be sustainable in the long term.
Chaos Complexity Theory	It is very difficult to accept the fact that it is not very challenging to predict the behaviour of some very complex organisations. In practice, it is only simplification that results in predictability. This theory also states that order occurs automatically without any intervention, but in practice, this isn't the case as experienced by the researcher.
Leadership Styles	We talked about four different styles of leadership. All four of them are distinctly different from each other, however all four of them are extremely important. The leadership style that needs to be adopted is circumstantial. Further to complicate matters the concept of "*shared leadership*" is also being looked at. The contradiction here is in terms of what leadership style is best suited for a software services organisation. How can a same individual possess different leadership styles, how will

Concept	Possible contradictions
	accountability be treated in case of shared leadership?
Resource skills and its impact on innovation	Drucker suggested innovation as a systematic search for windows of opportunity. What skills must be imparted to the organisational resources to drive innovation? Can the resources be enabled to drive innovation? If yes, what are those skills? Innovation's impact on sustainability is well acknowledged, but further deep dive needs to be conducted on the impact that resource skills have on innovation
Markovitz's Portfolio Theory	Markowitz's portfolio theory (1952) has resulted in a concept called ITPM (IT Portfolio Management). The contradiction here is the right amount of mix between transactional and strategic projects for an IT services firm. Transactional projects secure the revenues for today whereas strategic projects secure the future. Both are important but what is the right mix of investment? Do organisations focus a lot on transactional projects or sacrifice transactional projects for strategic portfolio. This is the contradiction that needs to be handled.

Table 4 - Contradictions in the research area

2.6. The rationale for considering the theoretical models

The researcher reviewed several other models in addition to the ones that were analysed in this chapter. There were many theoretical frameworks and constructs that have been developed in the field of Information Systems or brought into it from other disciplines.

None of these theories have been particularly adept at incorporating concepts around sustainability. The researcher looked at the key philosophy of sustainability- a simultaneous pursuit of economic prosperity, social justice and environmental integrity (Elkington, 1997).

The researcher started looking for specific references in the theoretical models/ concepts towards the three components mentioned above. Each of the models that have been considered has an influence on one or more factors of sustainability and has a direct bearing on the performance of the organizations. Although, many of these models are old, they are still being referred to in multiple literature around IT services. Further, D&M model is the most widely quoted model in the IS research (Lowry, 2007). The influence of culture, innovation, productivity and leadership on the longevity of the IT services organization is widely acknowledged (Dwivedi et al. 2012). It may also be noted that the theoretical underpinning for each question and the corresponding theoretical model is depicted in section 2.7.

2.7. Proposed research questions

Based on the study of the literature, the research questions are divided into four main categories.

All these questions determine the sustainability of the organisations. In the below mentioned table, the corresponding theoretical models have also been highlighted.

Category	Research Questions	Corresponding theoretical models
Strategic Intent	• What is the strategic competitive advantage of the organisations? • How strong and integrated is the Enterprise Risk management function of the organisation? • What is the right mix of projects that an organisation should look for (strategic, transactional and transformational)?	• Barney's Resource Based View • Markowitz's Portfolio Theory

Category	Research Questions	Corresponding theoretical models
Inherent Characteristics	• What is the leadership style in the organisation? • What is the self-organisation capability that helps organisation deal with chaos? • What is the level of innovation in the organisation? • What is the level of productivity in the organisation? • What should be the focus on resource skill development? • What is the impact of culture on organisation sustainability?	• Crossan M leadership principles • Chaos Complexity Theory • Hofstede's framework

Category	Research Questions	Corresponding theoretical models
Customer Centric nature	● What is the focus on service quality for the organisation? ● What is the ability of the organisation to retain customers who provide higher Customer Lifetime Value?	● D&M IS Model
Financial parameters	● What are the key financial parameters from the organisation's current financial reports that have an impact on the sustainability of the organisations?	● D&M IS Model ● Barney's Resource Based View

Table 5 - Proposed research questions and theoretical underpinning

A high-level context diagram is provided below. This context diagram provides a view of various characteristics and their corresponding categories that the researcher sensed, had an impact on the organisational sustainability. These factors have been identified and summarized based on the analysis of different theoretical concepts analysed through the literature review.

The relevant theoretical models that highlighted these factors are provided in the context diagram.
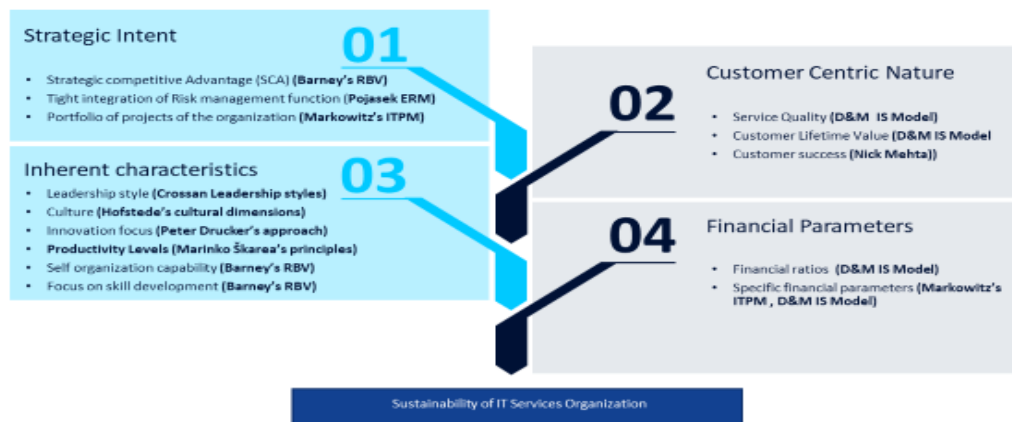
Figure 1 - Context diagram (developed by the researcher)

For the purpose of building a conceptual model, the researcher realized that the most significant issue around sustainability that the mangers are confronted with is prioritization (Bansal, 2014). The researcher hence looked out for a tool that will help Managers prioritize. After careful consideration, the researcher decided to use the Eisenhower's prioritization/decision making Matrix.

President Dwight Eisenhower himself developed the concept behind what would later be called the Eisenhower decision making matrix, to help him prioritize and deal with the many high-stakes issues he faced as a US Army general, then as Supreme Allied Commander of NATO Forces, and eventually as the 34th president of the United States.

Decades later, Stephen Covey popularized Eisenhower's framework in his book- The 7 Habits of Highly Effective People (Covey, 2004). As a result of Covey's work, the Eisenhower Matrix has become a widely used time-management and decision-making framework in business.

As described above, Eisenhower matrix is interested on the prioritization for better productivity and outcomes.

It is classified as Multi-Criteria Decision Analysis (MCDA), also known as the Multi-Criteria Decision-Making (MCDM), concerned with structuring and solving decision and planning, as well as evaluating multiple conflicting criteria in decision-making. Nevertheless, the Eisenhower method focuses on solving time and task management issues caused by bad prioritizing (Alfred Homère, 2019). The researcher hence felt that Eisenhower's decision-making matrix is a reasonable tool to build the theoretical conceptual model.

2.8. Chapter Summary

The primary objective of this chapter was to introduce the readers to the concept of organisational sustainability and tell a coherent story on how/why the same has a bearing on the IT services organisations. As a part of the literature review exercise, quite a few concepts relevant to the organisational sustainability have been explored. This chapter provided an overview of how the existing literature addressed the aspect of organisational sustainability.

While there was abundant literature available on the topic- Organisational sustainability, there was limited literature that is available on the topic organisational sustainability for IT (services) firms. If the geographical dimension of Singapore is added, there was very small set of literature that is available for assimilation.

 In this chapter, an effort was made to list down the possible underpinning theories that could provide an input to the research questions. Further, the research questions have been categorized across four areas.

Through the literature review exercise four theories and seven concepts have been identified as the ones relevant to the research topic.

These underlying concepts of these domestic theories filter through and are extended upon in multiple Level management theories that the researcher opined were relevant to sustainability of IT services organisations. It was argued that these theories are best suited to the complexity and diversity of influences and scenarios specifically in the context of Singapore that managers now must contend with.

The concepts in the chosen theories also underscore our understanding on what the influence of various concepts on shaping the perceptions of managers, their values and styles and the impact that this could have when working for IT services firms in Singapore.

The research questions collated in this chapter were the guiding factors for the remaining part of the research process. Further into the research, the impact of the theories and the chosen concepts were explored further on the chosen subjects. In the subsequent chapter, the researcher will elucidate the research methodology and the rationale for selecting the same

3. Research Methodology

3.1. Introduction

In the previous chapter, the researcher highlighted the need for additional research in the area of organizational sustainability for IT services organizations and established the context, relevant theoretical frameworks. This chapter describes the research methodology (including the philosophical position and research method) used in this exploratory study. It includes the theoretical basis for the objectives and outcomes of this study. Besides this, the research approach, data collection method, analysis, limitations, validity and reliability, and possible ethical considerations were also included in this chapter. The overriding guide for determining the type of information that is needed to answer the research question is based upon the premise that information becomes data only if a researcher can make it meaningful. Moreover, the chapter also explains the necessary procedures and their conceptual base in detail, as per the requirement of the study.

3.2. Research Process

The process followed by the researcher is depicted in the table below

Step	Description
Selecting the research area	The research area was selected based on the researcher's acquaintance with the subject and industry. The researcher has spent more than two decades of his professional life working for and with IT services organizations; hence the choice of this

Step	Description
	area of research was inspired through the dedication towards this industry. The evolution of organizations from creation to their demise, could have prominent impact on the economy (Nor et al. 2014). While the creation and sustainability of the firms help the economy in a positive manner, the extinction of the firms really has an adverse impact on the economy. The researcher was motivated towards this area of research, mainly to understand the key characteristics that influence the sustainability of the IT services firms from the practitioners in this field.
Formulating research aim and objectives	The first aspect considered was to determine the exact scope of the research and its limitations. The researcher intended to distill the subjective opinions of the participants as opposed to reliable, hard facts, or even causal relationships between different elements. The aim and objectives acted as a guiding principle for the same. The second important aspect was to determine the unit of analysis. The choice needed to be made if it was an individual, an organisation or a group of individuals like project teams etc. The researcher decided to select individuals as a unit of analysis. The last aspect was the outcome of the research, considering all these

Step	Description
	aspects, the aims and objectives were finalized. These were validated through a pilot project explained in the subsequent section and further refined to arrive at the final aims and objectives for the research.
Literature Review	The literature review proved to be the longest stage in the research process and the researcher utilized a wide range of secondary data sources such as journal articles, books, newspapers, magazines, online articles, industry reports by analysts etc. The primary output of the literature review was the research questions that were posed to the participants.
Selecting the research method	The researcher chose to utilize semi-structured interviews as the research method for data collection. The questions for the semi-structured interview were derived from the literature review. The rationale behind selecting this method is explained further in this chapter in section 3.7 research instrumentation.
Pilot Project	A pilot project was performed to test the research instrument (semi-structured questionnaire). The pilot was performed on one subject. Based on the analysis of the pilot results, the research instrument was

Step	Description
	updated. The aims and objectives were fine-tuned and finalized as well. The details of the pilot project are provided in this chapter in section 3.5 – Research design.
Data Collection	A total of fourteen semi-structured interviews were conducted as a part the research. Each of the interviews lasted for one hour. The interviews were recorded and transcribed subsequently.
Data Analysis	The collected data was analyzed utilizing Grounded theory. The researcher utilized a conceptually clustered matrix for data analysis and describing the results. The researcher also utilized a word cloud for this purpose. The word clouds are depicted in figures 4 and 5. The conceptually clustered matrix is provided in table 17.
Reaching conclusions	The final step of the analysis was writing up the theory and reaching conclusions based on the themes identified through the data analysis. This also included finding plausibility of the analysis, clustering the results and subsuming details into the general form.

Step	Description
Completing the research	The research project was completed by writing the thesis.

Table 6 - Overview of the research process

3.3. Research Philosophy

Research philosophy deals with the source, nature, and development of knowledge (Bajpai, 2011). This described the philosophical stance behind the researcher's chosen methodology and explained how it provided a context for the process and grounded its logic and criteria. There are three aspects of the research philosophy.

They are

- Epistemology

- Ontology

- Axiology

Epistemology is concerned with the question of what is (or should be) regarded as an acceptable knowledge in a discipline (Bryman, 2011). Epistemology is a branch of philosophy dealing with the sources of knowledge. Specifically, epistemology is concerned with possibilities, nature, sources, and limitations of knowledge in the field of study.

Alternatively, epistemology can be branded as the study of the criteria by which the researcher classifies what does and does not constitute the source of knowledge (Hallebone, 2008).

Epistemology (nature of knowledge) - In terms of gaining knowledge, this research was concerned with understanding the perceptions of managers who work in the IT services organisations, and to understand the thought processes of managers, directors, and executives who are responsible for company performance of various IT services organisations.

It is also concerned with determining the characteristics which they consider important in evaluating levels of sustainability of performance.

To understand how different types of managers interpret the impact of turbulence in the external business environment to the sustainability of performance.

It was important to identify the ethos and symbolic interactions from the past and the ethical background of the researcher before the researcher's philosophical stance was assessed.

Some of the important personal traits of the researcher that played a critical role in determining his philosophical instance were:

- The researcher is a manager and a sales professional by his job.

- He is extremely comfortable with numbers but at the same time, his daily work involves dealing with a lot of subjectivity around people and decision making.

- His thinking is more empirical in nature and believes in experiencing a fact to be able to subscribe to it.

Considering this, the epistemological instance that the researcher takes is interpretivism.

The interpretivist paradigms are distinguished by an interest in understanding the world of lived experience from the point of view of those who live it (Bryman, 2011). Their concern, therefore, is with a subjective reality.

Researchers working in this paradigm focus on situated actors who they construct as composing meaning out of events and phenomena through prolonged processes of interaction that involve history, language and action (Bajpai, 2011). Thus, social reality is not a given phenomenon, it is built up over time through shared history, experience and communication.

This is done, so that what is taken for '*reality*' is what is shared and taken for '*granted*' as to the way the world is to be perceived and understood (Schwandt, 1994). Interpretive social research, then, focuses on what events and objects mean to people, on how they perceive what happens to them and around them, and on how they adapt their behaviour considering these meanings and perspectives (Rubin, 2011).

Since the meaning is composed through situated interaction, the interpretive approach assumes that meaning is not standardized from place to place or person to person (Dey, 1993).

Interpretivist researchers accept that values and views may well differ across groups and across social settings, and they also appreciate that shared meaning is an achievement (Myers, 2019). The researcher represents these aspects in his way of dealing with people.

Interpretivists believe that in order to understand this world, researchers must consider active engagement, participation, and interpretation.

Thus, to prepare an interpretivist researcher must first participate in the social world in order to better understand it before they compose and offer their construction of the meaning systems of the social actors they study (Schwandt, 1994).

Interpretive researchers, therefore, use methods like participant observation and ethnographic interviewing to try to elicit organisation members' perspectives on the social worlds they live in, their work, and the events they observed or were party to (Rubin, 2011).

Interpretivist approach is based on the naturalistic approach of data collection such as interviews and observation. The primary research instrument that was employed by the researcher was interviews (semi-structured). In this type of study, meanings emerged only towards the end of the research process (Myers, 2019).

The approach the researcher adopted perceived reality as inter subjectively that was based on meanings and understandings of social and experiential levels.

There is a strong belief that people cannot be separated from their knowledge; therefore, there is a clear link between the researcher and research subject (Klein, 1999).

A few attributes that the researcher adopted were as follows:

- Nature of reality is socially constructed.

- The knowledge that is generated is relative.

- The relationship with the subjects is interactive and participative.

- The desired information from the interviews will possibly be, what some people think and do, what kind of problems they are confronted with, and how they deal with them.

Ontology is concerned with the nature of social entities. It is also a branch of philosophy that is concerned with the nature of reality (Bryman, 2011).

Ontology (nature of reality) – The realities this research is concerned with include: To understand how managers define the contributing factors to sustainability of information technology services firms in various types of business environments (Bajpai, 2011).

To understand if managers recognize the various factors impacting sustainability. How does manager's recognition about the factors impacting sustainability affect their emphasis on strategic advantage and operational effectiveness, the style of leadership, the elements of the culture, and some of the other factors that they believe foster sustainability of these organisations?

Ontology and epistemology are two different ways of viewing the research philosophy.

Ontology can be defined as the science or study of being and it deals with the nature of reality (Blaikie, 2019). Ontology is a system of belief that reflects an interpretation of an individual about what constitutes a fact. In simple terms, ontology is associated with a central question of whether social entities need to be perceived as objective or subjective (Milliken, 2010). Accordingly, objectivism (or positivism) and subjectivism can be specified as two important aspects of ontology.

The ontological stance of the researcher is Subjectivism.

The most important reason for this conclusion is that the researcher views the world as human feelings or thoughts rather than a collection of tangible objects. The other reasons are as follows,

- The researcher is interested in multiple solutions to a problem although there is ambiguity associated with the same.

- He cannot accept a single and definitive understanding of the problem and solution. Researcher's last ten years of career have been in Sales.

- He is used to subjectivity. His judgment is shaped by personal opinions and feelings instead of outside influences. The researcher's opinions are based on personal influences.

Axiology is about the values that govern the research. Axiology is engaged with assessment of the role of the researcher's own value on all stages of the research process (Bryman, 2011). As it is the case with Epistemology, the ethos of the researcher does have an impact on the axiological position.

Axiology (nature of perspective) - From a researcher's perspective, an organisation with dynamic and effective leadership, and an emphasis on

investing in both strategic positioning and operational effectiveness initiatives can lead to a better sustainability even in turbulent business environments (Bryman, 2011).

The researcher also believes that turbulence in the external business environment is a contributing factor to why it is necessary to manage organisations in different ways than they have been managed in the past and managers play an important role in ensuring the same.

The researcher's axiological position is that of a managerialist - Top-down. The rationale for the same is as follows;

- The selection of the topic which is around Organisational sustainability suggests that the approach is more a top-down than any other.

- The Researcher has been a manager over the past ten years.

- The researcher has been driving transformation projects which are again driven top-down. This will certainly influence the researcher's thought process, research methods and other means of conducting the research.

- Researcher's Axiological position will surely have an impact on the way the research is performed.

In summary the researcher's research philosophy is provided below:

Item	Type
Epistemology	Interpretivism
Ontology	Subjectivism
Axiology	Organisational- managerialism

Table 7 - Researcher's philosophical stance

The researcher understands that the interpretivist epistemology will involve the interpretation of the results.

Interpretivist researchers assume that access to reality (given or socially constructed) is only through social constructions such as language, consciousness, shared meanings, and instruments (Myers, 2019).

Interpretivism is associated with the philosophical position of idealism, and is used to group together diverse approaches, including social constructivism, phenomenology, and hermeneutics; approaches that reject the objectivist view that meaning resides within the world independently of consciousness (Collins, 2018).

According to the interpretivism approach, it is important for the researcher as a social actor to appreciate differences between people (Thornhill, 2009). Moreover, interpretivism studies usually focus on meaning and may employ multiple methods in order to reflect different aspects of the issue.

The researcher also comprehends that the main disadvantages associated with interpretivism relate to the subjective nature of this approach and great room for bias on behalf of the researcher. Primary data generated in interpretivism studies cannot be generalized. Since data is heavily impacted by personal viewpoint and values, therefore, reliability and representativeness of data is undermined to a certain extent (Dudovskiy, 2019).

3.4. Choices for research approach

The researcher considered three different approaches viz. Mixed methods approach, quantitative methods approach and qualitative approach. Mixed methods wasn't chosen for the following reasons

- The research design would have been very complex.

- Mixed methods approach would have taken much more time and resources to plan and implement this type of research. Also, it would have been difficult to plan and implement one method by drawing on the findings of another (Sharlene, 2010).

- It wasn't in alignment with the researcher's philosophical stance.

Research in Information Technology has tended to favour the '*empirical-analytic*' tradition of the natural sciences (Kitchenham et al. 2002).

Such is the extent of the use of experimental methods in IT that a systematic review of quasi-experimentation in IT Services research was reported by Kampenes et al. (2009).

Studies utilising these and similar natural science methods such as surveys were shown by Glass et al (2002). Studies also indicate that Information systems researchers have also moved towards a greater acceptance of research based upon the '*hermeneutic sciences*', and the accompanying qualitative methods of the interpretive paradigm (Klein, 1999). The researcher had the choice of adopting a qualitative approach or a quantitative approach or a combination of both for his research. The primary reasons why a qualitative approach was chosen are delineated below

- A qualitative approach may be used when little is known about a subject and the researcher may have few pre-conceived ideas about the subject or about the data which will be gained (Glasser, 1967). Since there was a limited data available in the public domain around '*sustainability of IT services organizations in Singapore*" the researcher wanted to generate

theory rather than testing a theory that is already available. A quantitative approach or even a mixed approach wouldn't really help the researcher meet the research aim.

- With the focus on the lived experience of the individual, qualitative approaches are most suitable when the aim of the research is to understand and explore people's views, beliefs and experiences (Gibbs, 2002). As highlighted in the aim of this research, the researcher intended to investigate the key factors that influence perceptions of managers impacting sustainability of IT services organisations located in Singapore. Thus, qualitative research was the best option.

- Finally, the research approach must agree with the philosophical position of the researcher (Dey, 1993).

    Considering this direction, the researcher decided to select qualitative approach for his research. This alignment wouldn't have taken place if the researcher had chosen any other approach.

Further, research approach can be divided into three types:

- Deductive approach

- Inductive approach

- Abductive approach

The relevance of hypotheses to the study is the main distinctive point between deductive and inductive approaches (Kumar, 2019). The deductive approach tests the validity of assumptions (or theories/hypotheses) in hand, whereas the

inductive approach contributes to the emergence of new theories and generalizations.

Abductive research, on the other hand, starts with '*surprising facts*' or '*puzzles*' and the research process is devoted to their explanation (Bryman, 2011).

The current research approach belongs to the category of inductive approach for the following reasons.

- Known premises are used to generate untested conclusions

- Data collection is used to explore a phenomenon, identify themes and patterns and create a conceptual framework

- It is an inductive approach, as it does not involve the formulation of hypotheses. It starts with research questions and aims and objectives that need to be achieved during the research process (Babbie, 1998).

Inductive approach, also known in inductive reasoning, starts with the observations, and theories are proposed towards the end of the research process as a result of observations (Goddard, 2004). Inductive research "*involves the search for pattern from observation and the development of explanations – theories – for those patterns through a series of hypotheses*" (Bernard, 2017). No theories or hypotheses would apply in inductive studies at the beginning of the research and the researcher is free in terms of altering the direction for the study after the research process had commenced.

It is important to stress that the inductive approach does not imply disregarding theories when formulating research questions and objectives. This approach aims to generate meanings from the data set collected in order to identify patterns and relationships to build a theory (Kumar, 2019).

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However, the inductive approach does not prevent the researcher from using existing theory to formulate the research question to be explored (Thornhill, 2009). Inductive reasoning is based on learning from experience.

Patterns, resemblances, and regularities in experience (premises) are observed to reach conclusions (or to generate theory).

3.5. Research Design

The research design can be defined as the way different components are brought together. The research design provides a framework within which the research is conducted. The value of any design is the same as any plan, i.e., it provides guidance and direction and a point of departure.

The researcher proposed to follow Maxwell's (2012) interactive research design.

The primary reason for choosing this research design is the fact that it has a flexible structure and focuses on the interconnected components. Maxwell's model has five key components.

Serial No	Item	Description
1	Goals	- Why is the study worth doing? - What issues do we need to address?

Serial No	Item	Description
		• What practices, policies need to be influenced?
2	Conceptual Framework	• What is going on with the issues? • What theories and beliefs will guide the research? • What literature and personal experiences will the researcher draw from?
3	Research Questions	• What does the researcher want to understand from the study? • What questions will the research answer? • How are these questions interrelated?

Serial No	Item	Description
4	Methods	- What will the researcher do in this study? - What approaches and techniques will be used to collect and analyze the data? - What are the data analysis strategies and techniques?
5	Validity	- How can the researcher's conclusions go wrong? - What are the plausible alternative interpretations? - How can the data potentially support the conclusions?

Serial No	Item	Description
		• Why should one believe the researcher's results?

Table 8 - Maxwell's interactive research design

The above-mentioned components are not significantly different from some of the other research design principles purported by Miles and Huberman (2010).

A detailed analysis of the same was performed by the researcher during the process of research. The above-mentioned model was primarily chosen due to its ability to depict the interconnections between all the five elements. Each component is closely tied to another representing an integrated and interactive whole.

The most important interconnections are depicted in the figure below,
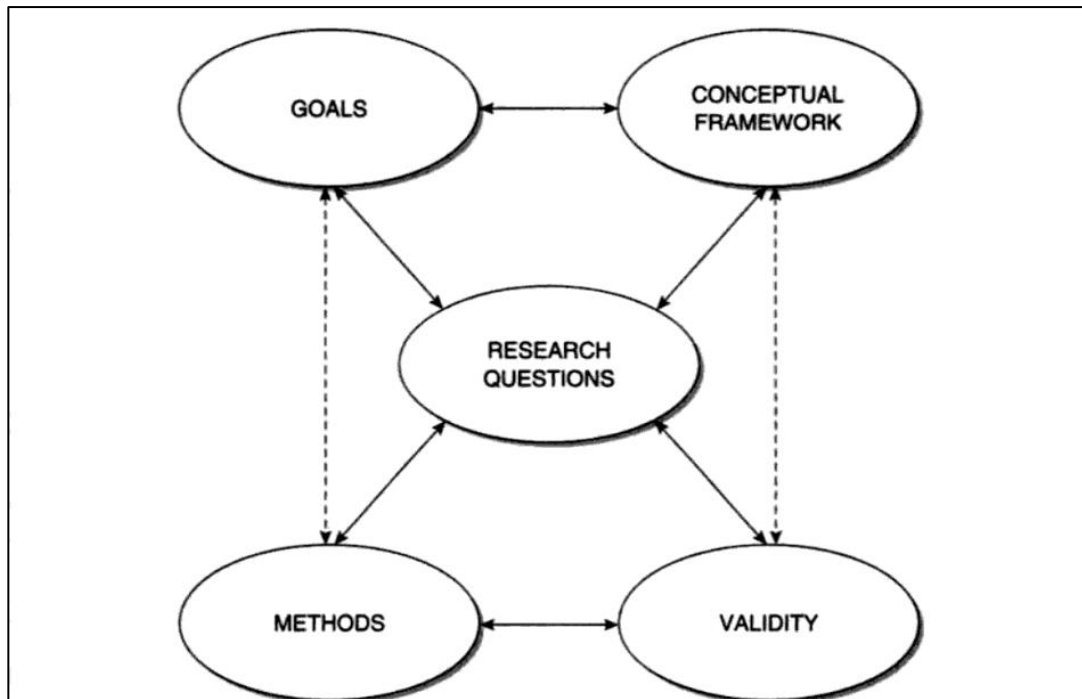
Figure 2 - Maxwell's (2012) research design- Interconnections

The upper triangle of the model should be closely integrated. The research questions should have a close relationship with the goals of the study and the theoretical concepts that can be applied to these phenomena. In addition to this, the goals of the study must be influenced by current theory and knowledge. The bottom triangle should also be closely integrated. The methods must enable us to answer the research questions and should also deal with the plausibility and validity threats to the provided answers. Finally, the research questions are the heart and hub of the model and they are responsible for connecting all the other elements of the design.

Having decided that qualitative research was the way forward, the researcher looked at the research design. The researcher reviewed the four possible approaches for research design.

All four approaches had a common thread that focused on research that began with a research problem, proceeds to the questions, the data, data analysis, interpretations and finally the research report.

- Narrative research

- Phenomenology

- Grounded theory

- Ethnography

The comparison and suitability of the above-mentioned approaches to the researcher's subject is depicted below

Foundational Considerations	Narrative Research	Phenomenology	Grounded theory	Ethnography
Research focus and approach	Exploring individual's life	Understanding the experience	Developing a theory based on data from the field	Describing a culture sharing group
Unit of analysis	One or more individuals	Several individuals who have a shared experience	Studying a process involving a few individuals	Studying a group that shares the same culture
Forms of data collection	Interviews	Interviews	Interviews	Observations

Foundational Considerations	Narrative Research	Phenomenology	Grounded theory	Ethnography
Type of research problem that best suits the approach and design	To tell stories of individual experience	To describe a lived phenomenon	Grounding a theory with views from the participants	To describe the shared pattern of the culture of a group.
Strategies for data analysis	Building the story and developing themes	Analyzing data for significant statements	Analyzing data through open, axial and selective coding	Analyzing themes about the group with the same culture.
Suitability to the researcher's problem	No	Partial	Yes	No

Table 9 - Comparison of the research approaches considered

Considering the above-mentioned factors, the option that best suited the current research problem was grounded theory. Further, the researcher concluded that the value of grounded theory was that it avoided making assumptions and instead adopted a more neutral view of human action in a social context. As an exploratory method, grounded theory was particularly well suited for investigating social processes that attracted little prior research attention, where the previous research was lacking in breadth and/or depth, or where a new point of view on familiar topics appeared promising (Milliken, 2010). The researcher also realised that the following advantages apply to the grounded theory, hence the same was employed by the researcher,

- Grounded theory produces a 'thick description that acknowledges areas of conflict and contradiction.

- As a general theory, grounded theory adapts readily to studies of diverse phenomena.

- Grounded theory can respond and change as conditions that affect behaviour change.

3.6. Research Method

A research method is simply a technique used for the collection of data for research (Bryman, 2011). The researcher used semi-structured interviews as the research method which was also the instrumentation that was used for collecting research data. The same research method was utilized for both Pilot and main study.

The research approach utilized was exploratory research. Further, the research was also be categorized as causal research. The reasons for this conclusion were as follows:

- The research has a specific purpose.

- The cause of the specific

3.7. Research Instrumentation

Instrumentation refers to the primary data gathering mechanism (Bryman, 2011). The current study utilised a semi-structured interview guide for the data collection purposes. The participants responded from the perspective of the company overall or from the perspective of the industry. In addition, all the participants were managers, directors, or executives, as it was assumed that individuals at this level would have access to the type of information that is sought to answer the research question(s). The instrument questions were formulated based on the literature review.

The semi-structured interview questions served as a guide for data gathering. The research instrument consisted of questions to determine the participant's perspective about various factors that impact the sustainability of the IT Services organisations. The researcher identified these factors across four categories viz. strategic intent, customer-centric nature, financial parameters, and inherent characteristics such as culture, leadership, and many more. Table 5 - Proposed research questions and theoretical underpinning in Chapter 2 provides a clear account of the theoretical models that contributed to each of the categories of the research questions.

These questions were based on the main themes (like D&M IS Model, Markowitz Portfolio Theory, Edward Lorenzo's Chaos Complexity theory and other theoretical concepts analysed in chapter 2) that emerged from the literature. The research questions are depicted below. The theoretical model that each question has been derived from is delineated as well.

Category	Research Questions
Strategic Intent	● What is the strategic competitive advantage of the organisations? (Barney's RBV Approach) ● How strong and integrated is the Enterprise Risk management function of the organisation? (Pojasek ERM) ● What is the right mix of projects that an organisation should look for (strategic, transactional, and transformational)? (Markowitz's ITPM)
Inherent Characteristics	● What is the leadership style in the organisation? (Crossan Leadership styles) ● What is the self-organisation capability that helps organisations deal with chaos? (Edward Lorenzo's Chaos Complexity theory)

Category	Research Questions
	• What is the level of innovation in the organisation? (Peter Drucker's approach) • What is the level of productivity in the organisation? (Marinko Škarea's principles) • What should be the focus on resource skill development? (Barney's RBV Approach) • What is the impact of culture on Organisation sustainability? (Hofstede's cultural dimensions)
Customer-Centric nature	• What is the focus on service quality for the organisation? (D&M IS Model) • What is the ability of the organisation to retain customers who provide higher Customer Lifetime Value? (D&M IS Model)
Financial parameters	• What are the key financial parameters from the

Category	Research Questions
	Organisation's current financial reports that have an impact on the sustainability of the organisations? (Markowitz's ITPM)

Table 10 - Final research questions utilized

The process of constructing research instruments for finding accurate answers of the data gathered on the study is known as instrumentation. For gathering the data, the most used tools are the questionnaire, interview, and observational approach. In the case of questionnaire, there are two types of question, that can be used namely open-ended questions and close ended questions. The type of questionnaire depends on the specific problems of the study, the researcher's target to solve and the space of population/sample targeted to fill-up (King, 2017).

Whereas in case of interview, questionnaire is either prepared or on the spot as per the aspects of the study, the questions are on the spot asked which helps in getting accurate answers. Hence, the researcher believes that the following aspects on the instrumentation are extremely important to consider.

Aspect	Researcher's commentary
Familiarity with the subject	Researcher has been serving in this industry for over twenty-two years now and he witnessed several important phenomena in this industry.
A multi-disciplinary approach	Instead of approaching the instrumentation from one discipline, the researcher considered multiple disciplines like Leadership, culture, customer success, strategic competitive advantage, risk management, and so on.
Effective interviewing skills	The researcher was building these skills and drew into his professional experience to handle this aspect.
Empathetic engagement with the subjects	This is an area the researcher drew his skills from his profession. The experience of dealing with mature individuals and sometimes with people who has better capabilities in his job as a manager helped the researcher.

Table 11 - Research instrumentation- Researcher's concomitant experience

3.8. Sampling

Sampling is the process in which units are selected that generalizes the population interest towards attaining the result of the study from the chosen population (Dudovskiy, 2019). The process of selecting a sample in the case of qualitative studies is not like the same as quantitative studies. It depends on the aim of the study, objectives, and other characteristics of the targeted population. Besides, there are three broad approaches to selecting the sample in a qualitative study (Milliken, 2010). In this research, sampling involved selecting the people the researcher was going to interview. The sampling approach adopted for this study was purposive sampling. Since we were focusing on obtaining inputs and analysing subjects with unique characteristics viz. working in the IT services industry in Singapore.

The researcher needed to seek inputs from practitioners who had considerable knowledge in this specialist field, thus a chosen few qualified as the potential participants for administering the research instrument.

He selected potential participants from his Linkedin contacts. The following pre-requisites were considered in determining the potential subjects,

- The participant should have worked in IT services organization in Singapore atleast for a period of ten years with an overall experience of more than sixteen years.

- The participant should have been a manager and should have led a team in their organizations.

- The participant should have the capability to articulate his views in a clear and concise manner. This was determined based on the researcher's acquaintance with the potential participant.

A total of twenty-four participants were selected and approached for the interviews through e-mail. All of these participants were Linkedin contacts of the researcher, hence, the researcher had access to all their e-mail addresses. Once a participant evinced interest for participating in the interview, the researcher placed a voice call to the participant and explained the purpose and approach for the interview.

The process was also explained and any questions from the participants were answered by the researcher. Based on the phone conversation, date and time was then set for the interview. Fourteen interviews were conducted by the researcher. The duration of each interview was sixty minutes. All the fourteen interviews were recorded and transcribed using the "*transcribe*" mobile application. The profile of the participants was chosen in such a way that there is a representation from managers at all levels of the organisations. From the CEOs all the way to the entry level managers were represented in the participants.

The profile distribution of the participants is provided below,

Serial No	Level of the participants in their organisation	Number of participants
1	CEOs/President	2
2	Vice President	3

Serial No	Level of the participants in their organisation	Number of participants
3	Senior Directors/Directors	4
4	Managers	3
5	Junior Managers	2
6	**Total**	**14**

Table 12 - Interviewee profile overview

There are three primary types of interviews viz., structured, semi structured, and informal/unstructured (Bickman, 2008). This study utilised a semi-structured interview technique.

A semi-structured interview combines predefined questions like those used in structured interviews with the open-ended exploration of an unstructured interview. The primary goal of these semi-structured interviews was to gather systematic information about the set of central topics viz. strategic intent, customer-centric nature, financial parameters, and inherent characteristics such as culture, leadership, and many others, while also allowing some exploration when new issues or topics emerge.

The researcher learned that semi-structured interviews can be used when some knowledge about the topics or issues are under investigation, but further details are still needed. Semi-structured interviews can be based on topics, issues, and questions that emerged from unstructured interviews or other sources of information (Wood, 1997).

The detailed approach that the researcher utilized for conducting the semi structured interview is further explained in Appendix 3.

3.9. Rationale for choosing semi-structured interviews

Some of the reasons why the researcher resorted to semi-structured interviews are depicted below:

- The researcher was gathering data on the topic where he was relatively certain that the key issues have been identified through the literature review. The researcher still wanted to provide the participants with an opportunity to raise new issues that are important through open-ended questions.

- The researcher intended to gather perceptions and opinions based on facts. The research aim alludes to gathering the perceptions of the managers.

- The researcher was gathering data when he couldn't observe behaviour directly because of timing, privacy, or other factors.

- Finally, the researcher intended to gather information about opinions, tasks, task flow, and work artifacts such as best practices.

The researcher opted to set the interview duration for one hour. The reason for limiting the duration of the interviews was primarily because interviews that are too long may reduce the pool of qualified participants who do not want to give up valuable work time.

The researcher has followed the guidelines provided by (Robson, 2002) and arranged semi-structured interviews that lasted for an hour including introductions, building rapport, and winding down at the end. This was also offering the participants a short break from their work and allowing them to go back to their work immediately after the interview.

Some of the best practices that were adopted by the researcher during the interview process are elucidated below:

- As suggested by Peerce (2015), the researcher probed the participants until no new information emerged. The order in which the questions were posed, and the time spent on the category of the questions varied based on the level of the participant. For example, for senior leaders more time were spent on inherent characteristics and strategic intent compared to the other categories.

- As suggested by Goodwin (2011), this provided minimal encouragement. Expressed understanding in a neutral fashion, just by nodding to show interest without biasing answers. This explained the limits of the researcher's ability to help the participant or give them solutions or advice during the interview.

- The researcher continually, reminded the participants that this information is confidential, and participants won't be identified in any way on the final thesis.

- The researcher also had several colleagues review the order of the questions to see if the answers to a question obviously bias subsequent questions might as advised by Blankenship (1998). The order was decided based on the feedback the researcher received.

3.10. Data Analysis

In 1967 Barney Glaser and Anselm Strauss published, "*The discovery of grounded theory*". It was their formal description of the approach to handling and interpreting qualitative data that they had developed. In the early 1960s, what is described as a participant observation study of hospital staff's care and management of dying patients was been interpreted.

The grounded theory style of qualitative research has travelled extensively since then, into different disciplines like psychology, information science, education, health care, management, and organisation studies (Morse, 2001). Glasser and Strauss characterized this research approach as one oriented towards the inductive generation of theory from data that has been systematically obtained and analysed. Norman Denzin, one of the editors of the widely read and cited Handbook of Qualitative Research, underscores the status of this approach to qualitative research with the startling statement that '*the grounded theory perspective is the most widely used qualitative interpretive framework in the social sciences today*' (Fine, 1995).

The researcher is of the opinion that in grounded theory, the theory wasn't proposed at the beginning of the study instead it was derived through cycles of data collection and synthesis as it is the prime characteristic of inductive research.

The grounded theory research method as illustrated by Gasson (2009) is depicted below. This is very specific to the Management Information Systems field which is the same as the IT services.
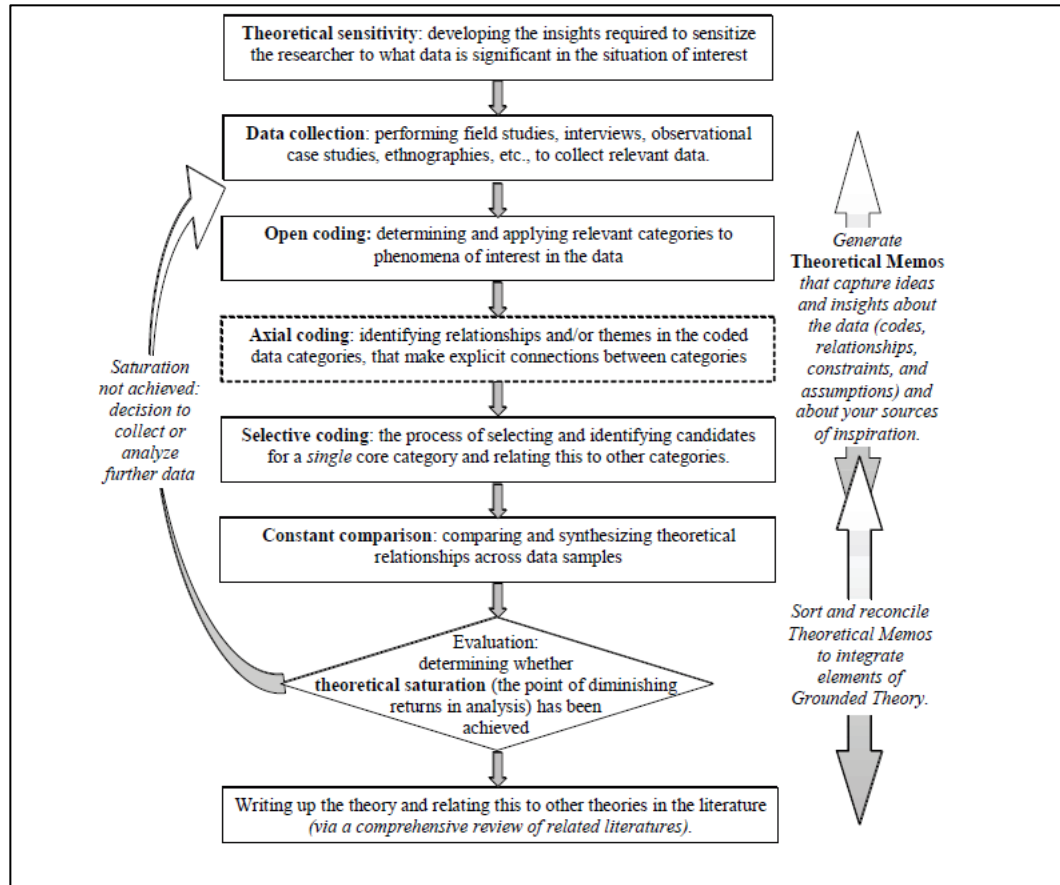
Figure 3 - Grounded theory approach adopted for the project (Gasson, 2009) pp no 36

The researcher followed the above-mentioned method for data collection and data analysis.

An explanation of how this method was adapted for the current research project is as follows,

The theoretical sensitivity was established as a part of the literature review. This stage also resulted in the interview questions required for the semi-structured interview.

The data collection was performed using semi-structured interviews and the nuances of data collection were explained in the previous section of this chapter.

The first step in data analysis was data coding. As a part of this process, data was categorized according to an emergent set of open codes (category labels) that the researcher identified to define key elements of the situation. Through iterative cycles of coding and analysis, data-categories were combined or split to define selective (theoretical) codes, abstract concepts that describe or explain themes related to the research phenomena of interest. Repeated iterations of coding resulted in an emerging theory that was defined in terms of abstract conceptual categories, and relationships between categories.

The coding process was divided into two major stages as advised by Saldaña (2016), first cycle coding was the initial stage- these are the codes initially assigned to the data units. These were the codes that were chosen based on the categories investigated through the instrumentation. The following first cycle codes were chosen:

- Strategic intent

- Strategic competitive advantage

- Risk management

- Portfolio of projects

- Leadership style in the organisation

- Service Quality mindset

- Customer centricity

- Financial strength

- Ability to operate in chaos

- Ability to handle changes

- Culture

- Innovation

- Productivity

- Resource skills

- Self-healing and self-organizing capability

- Response to disruptions in technology

- Customer lifetime value

- Customer success

 The above coding was performed based on the analysis that was conducted for the semi-structured interview transcripts. In Vivo coding, the first cycle coding was utilized. The coding also focused on generalizing the concepts that could represent the interviewees' views. Once the first cycle coding was accomplished, the second cycle coding was performed. This was done by grouping the key concepts into a finite number of categories. This was primarily done to arrive at the bigger picture. The four possible categories that were arrived at are as follows:

- Strategic Intent

- Inherent Characteristics

- Customer Centric nature

- Financial parameters

The second step of data analysis was generating theory. The researcher could define a core conceptual category in the data and identified key patterns of relationships between the various theoretical and conceptual categories that apply across data samples. These patterns were made explicit through the generation of theoretical memos as the analysis proceeded.

Analytical codes, relationships, and attributes were constantly compared across and between further data samples to understand how the emerging theory was reinforced or altered by new evidence. This process of constant comparison also guided further data analysis.

Data analysis continued in an iterative fashion until the researcher felt that theoretical saturation (the point of diminishing returns from further data analysis) was reached. The model purported by Gasson (2009) recommended iterative data collection and analysis, however, the researcher decided to make a small adaptation where the data collection was handled in one go and iterative analysis was performed on the collected data.

3.11. Use of CAQDAS (Computer Assisted Qualitative Data Analysis Software)

The researcher utilized a PC helped subjective information examination programming program (CAQDAS) as an apparatus for moving past a thick portrayal of the perceptions of the managers to arrive at an illustrative model grounded in the information. The researcher followed an iterative procedure whereby he moved between information assortment and examination, composing updates, coding, and making models. The nonlinear structure of the chosen CAQDAS program, NVivo, encouraged such iterative methodologies.

The assistance of CAQDAS was of paramount importance, indispensable, and mandatory for the success of a qualitative research project (Lyn, 1999). The researcher's aim was to find a program that could help with organisation and offer flexibility that would complement the analysis methods within the grounded theory.

A few computer programs are available as shareware and commercially that might have been suitable. The researcher chose NVivo as CAQDAS. The primary reason for this was the fact that NVivo was approved software for ENU; also, the researcher found that a lot of material was available in the public domain on NVivo compared to some other tools.

NVivo facilitated the iterative process of grounded theory in several ways. The researcher started the project in NVivo by collecting data and recording the same. As the data was integrated into the project, memos were attached to interview documents and coding categories. The program allowed for open coding, axial coding (making links between codes). Rather than requiring all the data be collected before analysis could start, the researcher started to analyse data as it was collected (Gibbs, 2002). The program facilitated and allowed text searches, ideas to be linked, data coded and searched, models to be drawn while always allowing the researcher to instantly access the original data behind the concepts. However, this did not imply that the computer was doing the analysis. As a researcher there were questions being asked, interpretations being done to the data, deciding what to code, and using the computer program to maximize efficiency in these processes (Bazeley, 2000).

The coding processes in grounded theory started with open coding or dissecting the data into discrete parts, examining the data for similarities and differences, and grouping together conceptually similar data to form categories. Corbin (1990) described conceptualizing or giving a conceptual name to categories (represented in NVivo by nodes), as the first step in theorizing.

When possible, node names were active to encourage the researcher to think about processes rather than the mere description (Glaser, 1978).

CAQDAS programs generally have a feature to create a list of nodes and their descriptions, like a codebook, that can be printed at any stage in the analysis (Bazeley, 2000). These descriptions, along with the node memos, enabled consistent use of the nodes. In grounded theory, memos were essential to the development of theory.

Through writing memos, the researcher moved from a descriptive model of placing conceptually similar passages together to thinking analytically about the emerging concepts. Following recommendations by Corbin (1990), different types of memos were created to facilitate thinking at different levels.

Data analysis was the most crucial part of any kind of research. It helps in summarizing the data collected. Besides this, it also involves the interpretation of the data gathered through various means of data analytical and logical patterns of the reason in understanding the relationship between the variables and trends existing in the collected data (Strauss, 1998).

Once the coding process was complete, the data was further analysed for any possible patterns. The idea was not only to build descriptive summaries of data but also to synthesize the data to yield a higher level of analytical meanings. From the analysis, the researcher planned to build a graphical picture from the data for easy comprehension.

For the graphical display, the researcher considered two options. One was code landscaping or word cloud.

A word cloud arranges the most frequently used words or phrases in the form of a text in a comparative font size with the codes that are most frequently used assuming larger size (Saldaña, 2016).

Conceptually clustered matrix is the first type of matrix that uses ordered conceptual framework or responses of the participant. It helps to connect the data in a conceptual coherence.

This kind of matrix is created in the form of a table that includes multiple research questions and the responses presented by the responder in the body of the table (Saldaña, 2016). The researcher used a conceptually clustered matrix for data analysis and describing the results. A conceptually clustered matrix has rows and columns arranged to bring together major research subtopics, categories, variables, and themes for an "*at a glance*" analysis (Saldaña, 2016). Use of conceptually clustered matrix helped researcher achieve the following important goals:

- Arrive at relationships between various variables and arriving at mediating variables where possible

- Making comparisons between the motives of different participants.

- Bringing out contrasting opinions from various participants

In summary, a conceptually clustered matrix brought together key data from all the participants into a single matrix. The goal was to summarize how things stood with regards to the selected variables, concepts or themes of interest.

3.12. Drawing the conclusions

Drawing the conclusions is the method of inferring the information that is implied in the study to make meaning out of the unclear statements stated (Saldaña, 2016). During the process of interviews or data collection, the participants gave some hints or clues related to the questions asked.

Thus, drawing conclusions helped the interviewer to read between the lines, since things spoken are not explicitly stated, at the time of interview. The final step of the analysis was by writing up the theory.

Glaser and Strauss's (1978) recognition that researchers need to write the developed framework in such a manner as to allow readers to imaginatively see and hear the actors in the social scene. In terms of the theoretical framework, the study foreshadowed two dimensions that Golden-Biddle & Locke (1997) subsequently framed through their study of writing practices in management and organisation studies. They are, achieving authenticity and a solid data theory coupling respectively (Wood, 1997). The researcher learned that it was important to delineate a grounded presentation of the theory that weaved together data incidents and theoretical elements. The data incidents needed to demonstrate that researchers authentically captured the realities of those they studied. The theoretical points needed to underscore that the researcher understood the general significance of those incidents. Theory, i.e., in grounded theory, is not intended as an all-encompassing grand theory; rather, it is a methodology to assist in the development of an explanatory model grounded in empirical data (Glaser, 1978).

The focus of the researcher in this part of the research process was the following:

- Noting patterns and themes and explaining the same with proper evidence.

- Finding plausibility of the analysis, clustering the results and subsuming details into the general.

- Making contrasts and comparisons.

- Building a logical chain of evidence and finally making a conceptual and theoretical coherence.

3.13. Reliability and validity

Despite the prestige and success in recent years, the application of science as a model for social "*science*" is not inevitable. Many have argued that social science has an intrinsically different set of goals that call for an altogether separate collection of methods. Others contend that recent developments in the natural sciences entirely discredit the fundamental notions (such as objectivity) of an earlier and outdated science (Kirk, 1986).

In the natural sciences, objectivity is obtained in two ways. First, the experience is reported in such a way that it is accessible to others. For example, when reporting an experiment every effort is made to describe the way the experiment was carried out, just in case somebody else would like to try the same thing. Second, the results of the experiment are reported in terms of theoretically meaningful variables, measured in ways that are themselves justifiable in terms of the relevant theories (Creswell, 2000).

Many social scientists have agreed that objectivity, in this sense, is an admirable goal. Yet, the description of reliability and validity ordinarily provided by non-qualitative social scientists rarely seems appropriate or relevant to the way in which qualitative researchers conduct their work (Winter, 2000).

The researcher understands that the general commitment of qualitative researchers to interacting with their objects of study. On the latter's home ground, it strongly encouraged the discovery that what the researcher took for granted at his/her home didn't apply in the new situation.

The analogy between qualitative research and other scientific methods and traditions has its limitations. Yet the ability of practitioners of certain kinds of scientific endeavour to talk about what it is they do is much more advanced than that of qualitative researchers (Van Maanen, 1979).

A measurement procedure is said to have instrumental validity (also referred to as "*pragmatic*" and "*criterion*" validity). If it can be shown that observations match those generated by an alternative procedure than itself accepted as valid. In most practical applications, demonstrating the validity of a measurement against a criterion is essentially unproblematic (Nunnally, 1978).

The concept of validity is described by a wide range of terms in qualitative studies. This concept is not a single, fixed or universal concept, but "*rather a contingent construct, inescapably grounded in the processes and intentions of particular research methodologies and projects*"(Winter, 2000, p.6).

Although some qualitative researchers have argued that the term validity is not applicable to qualitative research, at the same time, they have realized the need for some kind of qualifying check or measure for their research. For example, Creswell (2000), suggested that validity is affected by the researcher's perception of validity in the study and his/her choice of paradigm assumption. As a result, many researchers have developed their own concepts o validity and have often generated or adopted what they consider to be more appropriate terms, such as, quality, rigor, and trustworthiness (Davies, 2002).

If the validity or trustworthiness can be maximized or tested then more "*credible and defensible result*" may be generated which leads to generalization (Johnson, 1997), one of the concepts suggested by Stenbacka (2001), as the structure for both performing and documenting high-quality qualitative research. Therefore, the quality of research is related to the generalizability of the result and thereby to the testing and increasing the validity or trustworthiness of the research.

In contrast, Maxwell (2012) observed that the degree to which an account is believed to be generalizable is a factor that clearly distinguishes quantitative and qualitative research approaches. Although the ability to generalize findings to wider groups and circumstances is one of the most common tests of validity for quantitative research, Patton (1990) stated generalizability as one of the criteria for quality case studies depending on the case selected and studied. In this sense, the validity in quantitative research is very specific to the test to which it is applied – where triangulation methods are used in qualitative research.

Triangulation is typically a strategy (test) for improving the validity and reliability of research or evaluation of findings.

Although the term '*reliability*' is a concept used for testing or evaluating quantitative research, the idea is most often used in all kinds of research. If we see the idea of testing as a way of information elicitation, then the most important test of any qualitative study is its quality. A good qualitative study can help us "*understand a situation that would otherwise be enigmatic or confusing*" (Eisner, 2017).

This relates to the concept of good quality research when reliability is a concept to evaluate quality in a quantitative study with a "*purpose of explaining*" while quality concept in the qualitative study has the purpose of "*generating understanding*" (Stenbacka, 2001).

The researcher ensured validity and reliability in his research by employing the following techniques

- The researcher tried his best to avoid personal biases or keep them to a minimum to establish the validity of the research. This is accomplished by approaching the participants as a researcher not as a professional in this field.

- Sampling bias was given due to the technique of the sampling adopted, however, the researcher ensured that there is an equal distribution of roles across the organisational hierarchy.

- The researcher tried to be responsive and adaptable to situations, clarified and summarized things in the best possible manner to the audience after every category of the question.

3.14. Other Grounded theory approaches considered

The researcher also considered the approach from Kathy Charmaz, who characterises the methods of both Glaser and Strauss as 'objectivist'. Her complaint is that both authors separate the researcher from the experiences of the subjects of the study. She also felt that the recommendations from Strauss and Corbin about detailed analysis of transcripts, including line by line analysis and '*fracturing of data*', reduced the ability to represent the whole experience of individuals involved.

In her view, a constructivist should recognise, '*that the viewer creates the data and ensuing analysis through interaction with the viewed*' (Charmaz et al. 2000). As such she is located a little further in the constructionist direction than Strauss because she emphasizes the interaction between the researcher and the researched, rather than between the researcher and the data. Charmaz (constructionist) went further in emphasising the primacy of the stories and experiences of her research subjects.

However, the recommendations from Glaser (1978) who suggested that researchers should start with no presuppositions, and should allow ideas to '*emerge*' from the data; whereas Strauss (1998) recommended familiarising oneself with prior research and using structured, and somewhat mechanistic, processes to make sense of the data made the researcher choose this approach.

3.15. Ethical Considerations

Apart from the procedure discussed above, the most important part of research was taking care of ethical considerations.

Thus, various principles of ethical considerations like identity of participants, dignity, consent, privacy of research, confidentiality level, transferability, deception of aims and objectives, and many others needed to be taken care of. Hence, the researcher for this study evaluated three main positions in ethical theory: duty ethics, ethics of consequence, and virtue ethics (Bickman, 2008).

Ethical position	Explanation of how the researcher met the same
Duty Ethics	• No harm was done to any participants as a part of this research
Ethics of consequence	• No vulnerable individuals were utilized as subjects for this research • All the individuals participating in this research as subjects had adequate information on what the involvement in the research would entail and the consequences • No harm was done to the participants • All the research subjects' views irrespective of gender, position in the organisation received the same weightage
Virtue ethics	• The researcher always considered ethical issues before making any judgment throughout the research process

Table 13 - Three main positions in ethics

A few ethical issues and the researcher's mitigation plan and perspectives are provided below.

Item	Perspective/Mitigation plan
Worthiness of the project	Currently, there are not many studies on the IT services firms in Singapore. This study and the results will certainly be worthy for the participants as they would gain decent insights from the findings and conclusions
Competence of the researcher	The researcher has worked in the IT field for 22 years and has worked with several global IT services and product organisations. The researcher has been working with Singapore IT firms for the past 10 years. With this pedigree and qualifications, the researcher performed the research with acceptable quality.
Informed Consent	The subjects participating in the study had full information about the study. Participation in the study was fully voluntary. The subject could exit the interview at any point in time. The same was informed to the subject prior to the start of the interview.
Benefits, costs, and reciprocity to the subjects	When the findings are shared with each participant, they obtained valuable insights about their own industry and factors that impact the sustainability of their own firms. The participants didn't incur any costs

Item	Perspective/Mitigation plan
	including the transport costs. The researcher met them at a place of their choice.
Harm and Risk to the subjects	There was no harm or risk of any type to the research subjects
Honesty and trust	The researcher only sought perspectives; no promises were made. The researcher kept the subjects fully informed about the objectives of the study.
Privacy confidentiality and anonymity	Privacy of the researchers was fully protected; no sensitive information was collected. Confidentiality was maintained. No subject was directly referred to in the analysis. All references were anonymous.
Intervention and advocacy	There was no scope harmful illegal or wrongful behavior from either the subject or the researcher
Research integrity and quality	The study was conducted carefully, thoughtfully, and correctly. Only the perspectives and opinions of the participants were sought during the interviews
Ownership of data	All the interview notes, transcripts and analysis were owned by the researcher only.

Item	Perspective/Mitigation plan
Place for data collection and data management plan	The interview was conducted either in the subject's office or at a meeting location that was acceptable to the subject and researcher. The data that was collected and the corresponding analysis will be managed as per the ENU guidelines for research data.

Table 14 - Ethical issues and mitigation plan- researcher's view

3.16. Chapter Summary

The methodology chapter highlighted the philosophical stance of the researcher and provided an overview of the research design adopted by the researcher. The ontological stance of the researcher is Subjectivism. The researcher adopted Interpretivism as his epistemological instance. Qualitative research was chosen as the most appropriate research strategy because it is suited to understanding human behaviour from the participant's own frame of reference. It enables flexibility and has the capacity to explore social processes as they unfold.

Given the often emergent and changing properties of perceptions of managers, the researcher opined that qualitative research would be an effective approach.

The methodology selected was a grounded theory consisting of open coding, axial coding, selective coding and constant comparison. These approaches were deemed to be suitable for research in the IS discipline.

They provided new insights into the understanding of social processes emerging from the context in which they occur and gave room for the interpretation of 'real' experiences of the interviewees and provided a systematic means to efficiently analyse qualitative data.

The method employed was semi-structured interviews which enabled the researcher to explore themes. Additionally, its flexibility allowed the researcher a degree of control and freedom to alter the sequence, to probe for more information, to investigate interesting unexpected issues and to adapt the questions in line with levels of comprehension and articulacy of the participants.

A pilot study was undertaken to understand the reality and viability of logistics such as gaining access to participants and fine tuning the questionnaire. Also, it provided an opportunity to test the researchers interview technique as well as test the viability of the structure and content of the proposed interviews and the interviewees' understanding of questions. In this chapter, the researcher explained the methodology and the corresponding rationale and paved way for the future chapters by explaining the data collection analysis and data presentation approaches. In the following chapter, the researcher will analyse the data, present his findings, present a conceptual model and eventually provide recommendations to managers to improve sustainability of IT services organizations in Singapore.

4. Analysis, Findings, Discussions and Management Recommendations

4.1. Introduction

In the previous chapter, the researcher highlighted the philosophical underpinnings of the research, and the specific research design choices that were made. The literature review chapter highlighted that there is limited literature available on the factors impacting the sustainability of IT services firms. Thus, this thesis reflects a program of research completed over three years centred around determining the factors influencing the sustainability of IT services organizations based on the perceptions of managers in Singapore. In this chapter the researcher analysed the data based on the methodology and approach explained in the previous chapter. This study sought to identify and prioritize the key characteristics influencing the sustainability of IT services organizations in Singapore and to present them in a visual framework. In addition to providing a comprehensive view of the codes that emerged from the analysis, the chapter also provides an insight into the thought process of the interviewees by highlighting some specific statements in response to the questions of the interviewer. These statements were carefully picked by the researcher and these are the statements that had a profound impact on the analysis and the recommendations made by the researcher. This chapter also provides a detailed perspective on the profiles of the interviewees and finally delineates the list of codes and their categories that will be utilized in building the conceptual theoretical model. This chapter also focuses on reporting the findings and making suitable recommendations to the IT services organisations.

4.2. Overview of the participants

A total of fourteen (14) professionals participated in the semi-structured interview process. They together possess a total experience of three hundred and fifteen (315) person-years. Each of these 14 participants were employed in different organizations. No two interviewees were employed in the same organization.

A brief about the interviewees is provided below,

Serial No	Interviewee No	Brief Overview	Age of the interviewee (number of years)	Experience of the interviewee (number of years)
1	Interviewee 1	Sales Director of an IT services firm	45	20
2	Interviewee 2	CEO of an IT services firm in Singapore	56	32
3	Interviewee 3	Director in an IT services firm in Singapore	50	27

Serial No	Interviewee No	Brief Overview	Age of the interviewee (number of years)	Experience of the interviewee (number of years)
4	Interviewee 4	Head of Sales for a large Software Services firm	50	26
5	Interviewee 5	CEO of an IT organisation that sells both products and services	58	35
6	Interviewee 6	Senior Sales manager in an IT services firm	44	20
7	Interviewee 7	Senior Delivery manager in an IT services firm	43	19
8	Interviewee 8	Senior Sales Director in an IT services firm	46	21

Serial No	Interviewee No	Brief Overview	Age of the interviewee (number of years)	Experience of the interviewee (number of years)
9	Interviewee 9	Financial Director in an IT services firm in Singapore	41	15
10	Interviewee 10	President of an IT services firm and an analyst research firm with focus on IT services and other areas	51	28
11	Interviewee 11	Vice President in an IT services firm in Singapore	51	28
12	Interviewee 12	Vice President in an IT services firm in Singapore	53	24

Serial No	Interviewee No	Brief Overview	Age of the interviewee (number of years)	Experience of the interviewee (number of years)
13	Interviewee 13	Chief Risk Officer for an IT services firm in Singapore	40	14
14	Interviewee 14	IT services veteran in Singapore, worked in multiple roles with IT services firms in Singapore. Currently a CEO of a sustainability consulting firm	58	32

Table 15 - Profile of the interview participants

4.3. Analysis

IT Services Professionals at different levels of the hierarchy were interviewed through this exercise.

While all participants understood the concept of sustainability and its meaning, people had different perceptions on how they would define sustainability, the common thread in all definitions was "*make sure you survive for tomorrow*". Every interviewee evinced decent interest in the topic and stated that this is a characteristic that the IT services firms need to be thinking about. The more senior the interviewee was in the organisation, higher was the importance assigned to sustainability. The study also focused on identifying various characteristics influencing sustainability, these factors were highlighted in figures 4 and 5 and also table 17 after the analysis was completed.

These were developed based on the perceptions of managers who were employed in the IT services firms in Singapore. The context of the discussion was always Singapore so that we could focus on one geographic boundary.

The next section provided a view of various characteristics based on the interviews and the subsequent analysis performed by the researcher.

4.3.1. The coding process

The data was analysed in NVivo, the analysis yielded a few new codes. These are the additional codes from the ones that were already identified priorly. These were proposed based on the analysis, and they were moved into one of the relevant categories. The researcher considered four categories viz. Strategic Intent, Inherent characteristics, customer-centric nature, and financial parameters. The data was also analysed to see if there is any new category emerging from the data collected. The new codes and the corresponding statements that were yielding the codes were analysed.

This was mainly done for checking for the new codes or categories. For this purpose, the researcher thought it was worth considering that the categories or the codes had a relationship with one of the existing categories.

4.3.2. New codes

The new codes that emerged through the analysis and their corresponding categories were as follows,

1. **Ability to offer new business/commercial models:** Ten out of fourteen interviewees identified this as one of the most important characteristics of impacting sustainability. Interviewee 10 called it, the biggest possible opportunity for innovation for IT services firms. Interviewee 8 and 12 stated very clearly that the way the customers are consuming services today has transformed over the past decade and will undergo an exponential transformation in the coming decade. Interviewees 4, 5 and 7 stated that an organisation must transform its internal characteristics to offer more innovation in the form of business models. Considering these statements, it was decided to add a new code – business models, and this is proposed to be a part of the category inherent characteristics. This characteristic was also referred to in the theoretical models pertaining to Markowitz's ITPM and Innovation.

2. **Customer stickiness:** Seven out of fourteen interviewees mentioned that creating customer stickiness is one of the important factors impacting the sustainability of the IT services organisations.

When asked to define, Interviewee 5 defined stickiness as *..."customer stickiness is a phenomenon where customers keep coming back to you in a competitive environment because of a consistently better value transaction – possibly due to price, speed, benefits, convenience, service or a range of factors"...* It isn't one factor that impacts the customer stickiness, according to the interviewees, it is difficult to measure and a subjective factor but can have a substantial impact on the sustainability of IT services firms. Again, the definition suggested that it should be a part of the category- customer-centric nature. This characteristic was partly covered in the D&M IS model.

3. **Obsession with the customer:** Interviewee 3 brought up the new concept and the definition of obsession with the customer. The definition of the same was provided earlier in his chapter. This seemed like an important characteristic that determined the sustainability of the IT services firms. This is included as a new code under the category- customer-centric nature. This characteristic was also partly covered in the D&M IS model.

4. **Enhanced focus on support:** Interviewee 12 brought up this topic, according to him, how the customers are supported will determine if they will continue giving business to the firm. However, the researcher opined that it was too narrow an area, and when this was compared with the existing codes, the core customer success seemed to address this new concept. Hence, a decision was taken not to include this as a new code. There was also a new code that emerged to make it easy to consume, but this concept could be consumed into the code customer stickiness. This characteristic was partly covered in the D&M IS model.

5. **Brand value:** Four interviewees mentioned brand value as an important characteristic which is mentioned in the above section of the analysis chapter. All of them talked about brand value when the category financial parameters were being discussed. Hence, a decision was made to include brand value as an additional code under the category financial parameters. Brand value was discussed in the literature review section.

6. **Governance:** This was also mentioned as one of the important characteristics of the three interviewees. However, the researcher felt that this topic can be addressed by the existing codes like leadership and culture. Hence, a decision was taken not to include this in the new list of codes. Governance was covered as a part of Barney's RBV.

7. **Agility:** Six interviewees mentioned agility as an important characteristic to be sustainable. Interviewee 1 defined agility as an organisation's ability to respond and adapt to the changes in the external and internal environments. Interviewee 11 linked this to culture and mentioned that agility must be built in the culture. Interviewee 4 linked this to innovation and talked about the agility of bringing innovations in the service offerings and adapting to the changes in the customer/industry environment. Hence, considering the interviewees statements and analysing the same, agility was added as an additional code under the category inherent characteristics. This was partly covered in Barney's RBV.

8. **Diversity:** Twelve interviewees mentioned diversity as an important factor in impacting sustainability. Interviewee 13 talked about this when we were discussing the people aspect of the PPPs, whereas Interviewee 5 categorically stated that diversity is required across all facets of an organisation, it is required in people, thought process, customer base, industries being addressed, the geographical distribution of the business and finally the technologies that are being considered. Analysing the given statements, it was decided to include diversity as another code under the category inherent characteristics. Diversity was discussed in the literature review as a separate concept.

9. **Resource capabilities:** This variable was proposed as another characteristic by five interviewees, instead of creating a new code, a decision was made to include this into one of the existing codes and modify the same. Edward Lorenz's Chaos complexity theory and Barney's RBV alluded to resource capabilities.

10. **Unnamed Category:** Four new concepts were discussed when the category inherent characteristics were being debated upon. The first one was- industry and domain skills, four interviewees talked about the same. However, upon careful consideration, it was decided to park this under the category- skill development. Interviewee 10 talked about the creation of intellectual property. Since this was closely linked with innovation, no new code is considered. Consistent reinvention was also proposed as a characteristic and this was linked to the thriving in chaos concept. Open communication was another concept that was floated, and it was decided that this is closely linked to leadership.

Recruitment practices have also emerged as one of the new concepts. Interviewee 2 talked about leveraging university students and projects with universities as one of the important productivity improvement measures. He also talked about crowdsourcing specific initiatives and not reinvent the wheel. Upon careful consideration, recruitment practices are also considered as an extension to people skill development and productivity, hence, a new code wasn't considered. The existing code under the category- skill development has been renamed as resource skills and development. This code encompasses both aspects of acquiring, building, and nurturing resource capabilities.

11. **Sound operating principles:** This category was also another facet, Interviewee 10 talked about this. According to him, *…"It is essential for IT services firms to have sound operating principles which will enable them to deliver consistent levels of performance and value to their customers and the key is to do this consistently for a sustained period"….* A decision was made to merge this proposal with governance and a new code was generated – operating principles under the category inherent characteristics. Four interviewees alluded to this characteristic. This was also covered in the Markowitz's ITPM.

12. **Strength of the vision:** When discussing leadership, five interviewees talked about the strength of vision as one of the key facets. All of them were consistent in stating that, for organisations to survive through different times, a visionary leader with clarity and strength in the vision will be a key prerequisite. Interviewee 2 and 14 identified vision as one of the important

factors that will attract resources towards the organisation and place them in a great position to attract the right talent. According to interviewee 9, a strong vision is tantamount to having a strong brand value. The way a brand value brings customers to the organisation, a strong vision also brings both customers, employees, and even investors into the organisation. Interviewee 6 noted that having a strong vision is of paramount importance especially in the area of IT services segment where there are quite a few options available for the organisations. According to him, a strong vision will make sure that the organisations do not spread themselves too thin. Interviewee 5 mentioned that a strong vision will help IT services organisations "*stay ahead in the game*". The researcher considered this concept for a code however decided against it as it is not a broad enough topic and can be consumed in the code- vision. Considering the importance attached to this concept by nine interviewees, a decision has been made to include this as one of the codes under the category, strategic intent. This concept was covered in the Edward Lorenz's chaos complexity theory.

4.3.3. Final list of codes

Once the new codes were finalized, the researcher used the method of axial coding and constant comparison (as explained in research design- section 3.5) to determine the validity of the codes and the interrelations between different codes. The next section- Section 4.4 highlights some of the salient points made by the interviewees that had a direct impact on finalizing these codes. Based on the analysis the finalized codes and their corresponding categories are depicted below:

Categories	Codes
Customer centric nature	● New business models ● Focus on customer success ● Customer stickiness ● Obsession with the customer ● Quality conscious nature
Inherent characteristics	● Ability to handle uncertainty ● Agility ● Concern for the planet ● Culture ● Diversity ● Innovation ● Leadership ● Resource capabilities & skills ● Sound operating principles ● Productivity
Financial parameters	● Financial parameters ● Brand value

Categories	Codes
Strategic intent	● Risk management ● Project portfolio ● Strength of the vision

Table 16 - Finalized codes and categories

4.4. Salient points made by the interviewees

This section captures a few salient points made by the interviewees in response to the questions from the interviewer. These points influenced the coding process, conceptual theoretical model and the final recommendations made by the researcher in the subsequent chapters of this thesis.

4.4.1. Is Sustainability recognized as an important factor in today's context?

All interviewees acknowledged that thinking about sustainability is of paramount importance for today's IT services organisations.

Everyone felt that it is important for leaders in IT services organisations to think about this aspect and the most important point as quoted by Interviewee 1 was,

…*"Sustainability as a topic will be of interest to every individual in an organisation, whether it is a graduate entrant, a CEO or even a mid-level manager, all of them would be concerned about their future which may be entwined with the future of the organisation that employs them"*...

This was a heartening first step as the entire project would have lost its relevance if the interviewees felt otherwise. Interviewee 2 who is a CEO mentioned the following as his first opinion on sustainability,

"For a firm to be sustainable in this market. the firm must look at the customers in the region. Because Singapore is a small market. So, a significant part of revenues should be coming outside of Singapore. And within Singapore, the government-linked companies (GLCs) public sector, and the banking system will form a core opportunity for these companies"...

This is a very important perspective especially for IT services firms related to Singapore. Interviewee 2 brought a different perspective.

He stated that,

"It is important that you think about the sustainability of the customer, as a customer is the reason for our existence if our customer is sustainable, the business will be and it means you are adding value and your business will be sustainable as well"...

From this, it was evident that customer focus is one of the important characteristics influencing sustainability.

In summary, there is a consensus among all the interviewees that organisational sustainability is an important and relevant topic that IT services organisations must seriously think about, when asked how their firms viewed this topic, ten out of fourteen interviewees stated that they do not really have a specific focus on sustainability but this discipline was a part of corporate strategy.

Four interviewees stated that their organisation created this function reporting to the CEO or in the process of creating the same.

4.4.2. How do you define sustainability especially from an IT organisation perspective?

The topic of sustainability was introduced, and the definitions were provided based on the literature review. The key aspects highlighted were

- Meeting present needs without compromising the ability of future generations to meet their own needs (Longoni, 2014, p.602).

- Triple Bottom Line (TBL) concept is the most common framework utilized in the management field to conceptualize various aspects related to organisational sustainability (Bansal, 2014).

Having provided the perspective, the question to the interviewees was to highlight what came to their mind when they heard about the topic of sustainability from an IT services firm's perspective. Interviewee 13 who works as a Chief Risk Officer in a large Multi-national organisation provided a very important perspective,

...*"Sustainability in my view is being able to set up a structure in place that can drive long term viability of an organisation and be able to withstand different cycles, different macroeconomic environments, different global scenarios"*...

This was a decent perspective in line with the literature review that was conducted. As highlighted earlier, Pojasek argued that Enterprise Risk Management has a profound impact on the sustainability of the IT services firms (Pojasek, 2013). Interviewee 14 who is a veteran in IT services and a CEO of a sustainability consulting firm,

..."*there are two perspectives of sustainability – business and social aspects of sustainability. It is important for organisations to adopt Strategic Development Goals (SDGs) from the United Nations*"...

In chapter 2, the researcher highlighted that SDGs formed an important benchmark for an organisation to strive towards sustainability. Interviewee 14 also highlighted the aspect that today the awareness of sustainability and its components wasn't comprehensible for several executives. Out of fourteen interviewees, it was very clear that the higher you are in the organisation, the better the awareness of sustainability was spread. The study also showed that middle level and junior level managers had limited understanding of this topic.

4.4.3. Discussions on factors influencing sustainability

The impact of several factors considered in the semi-structured interview is discussed in the following sections.

4.4.3.1. Strategic intent

The first area of discussion was the strategic intent of the organisation. This comprised three questions- one on strategic competitive advantage, two on enterprise risk management and the third one was about the right mix of projects.

When the question, what is the real strategic competitive advantage for IT services organisations, was posed, fourteen out of fourteen interviewees pointed out that it is their human resources that yields the same. Everyone referred to the talent pool that the organisation possesses as the key element for strategic competitive advantage.

Interviewee 1 mentioned,

…*"the intellectual property and unique frameworks/processes that the organisation nurtures also provide them with the strategic competitive advantage"*...

Interviewees 7,9 and 12 rendered their comments in similar lines. In their view, these unique artifacts would help organisations perform their tasks at a faster pace and cheaper cost.

Interviewee 2 who is the CEO of a firm stated,

..."the leadership vision of an organisation provides the strategic competitive advantage"*...

Interviewee 4 who was head of sales for a large software business mentioned,

…*"innovation/ability to innovate as one of the key elements that will help in gaining the strategic competitive advantage"*...

The second question was about risk management. All the interviewees agreed that Enterprise risk management plays a very important role in the sustainability of IT services firms. Interviewee 13, head of risk management for an IT services division, provided an interesting perspective on risk management's influence on sustainability,

..."The enterprise risk management what it does is creates the framework, a template where the organisation number one can grow in a responsible sustainable way in the long run. Number two it can withstand different cycles of the chaos of disruption and adapt in a very meaningful way"*...

The key aspect found in this statement was the framework that enterprise risk management provides to deal with the disruptions that seem to be a common theme in the IT services space. Interviewee 9 who is an individual handling finance and control functions for IT services firms in Singapore stated that,

…*"the Enterprise Risk management function helps in controlled innovation"*...

The third question was on the right mix of projects that an organisation should consider in terms of strategic, transactional, and transformation projects.

The interviewees were introduced to Markowitz's ITPM and afforded the definitions of these three project types prior to seeking their views on this subject. The definitions are depicted below,

- Transactional projects- Represents expenses and investments to support the daily tasks and operations of the customer organisation. These are regular volume projects and can be handled by any IT services organisation. These result in a limited risk to the customer if there is a change in the partner (Tyssen, 2014).

- Transformational Projects are the ones that support long term decision making, planning, communication, accounting, and analysis. These require domain knowledge of the customer industry and they are the ones that must be executed by resources with greater skills and these are more expertise-based engagements. These have a moderate risk to the customer if there is a change in the partner/supplier (Wiek, 2012).

- Strategic projects are the projects where the customer is making investments to reposition and maintain the organisation's market. Investments in this dimension typically alter the nature of IT services and organisational processes in the industry. These result in a high risk to the customer if there is a change in the partner (Shenhar, 2004).

Interviews were conducted to identify the percentage of projects in the portfolio of IT services firms that managers considered was most appropriate and would assist in sustainability.

Most of the interviewees opined that 70% of the weightage towards the transactional and transformational Projects. While the strategic projects were given only a 30% weightage while selecting a project. Besides this, there were a couple of anomalies also found while selecting a project. Interviewee 11 among the employees that work in organisations wherein cloud services were demanded, he recommended,

…*"45% for strategic projects and 55% for the other two were found to be fruitful for the organisation"*...

Interviewee 1 also provided a similar feedback,

Interviewee 2, who is a CEO of an IT services organization,

…*"There is a clear need for a larger proportion of the strategic projects compared to the other two. the strategic projects are like "moon shots" in Google's parlance...*

Hence, it can be concluded that IT organisations should invest in these moon shots (strategic projects) which may not yield any return in the short term and even in the medium term, but these would be the growth engines for the longer term. All the interviewees agreed that project portfolio will make a significant contribution to the sustainability.

4.4.3.2. Inherent characteristics

Almost 40-50% of the interview time was spent on the collection of data related to the inherent characteristics of the organisation as all the interviewees sought to elaborate and discuss these characteristics in a more detailed manner. The interviewer first spoke about the influence of resource skill development to sustainability.

Besides this, all the fourteen interviewees agreed that there is a direct link between resource skill development and it also has a positive impact on the resource skill development by improving focus on the sustainability of the IT services organisation. Interviewee 5 who is a CEO affirmed,

…*"learning must be an integral part of an IT professional's daily life and must be continual"...*

Interviewee 2 also supported the idea to clarify his thoughts by stating that learning through structured programs is no longer in vogue, digital learning, and learning in digital time are the most important aspects of today's life.

The learning must happen continually without any end as things are changing in the IT services space at a very rapid pace. In his words, Interviewee 2 asserted,

...“The way to do this is to find a better way of getting structured information in small chunks of time, as opposed to these massive training sessions”...

Interviewee 12, a vice president, he emphasized that there is a need to focus on both technical skills and soft skills when it comes to skill development. He also mentioned that focusing on just one of them won't be most effective while attaining the goals of the organisation. Besides this, when asked who is responsible for the resource skill development, is it the organisation or the individual themself, there was a consensus among all the interviewees that it was themself that was responsible for the individual to focus on skill development. Interviewees 6 who is head delivery in IT services, also felt that the organisation must provide the necessary environment (infrastructure, ecosystem, and incentives) and framework for measurement for continual skill development. Interviewee 7 provided a similar view.

After this, the next aspects that were discussed were culture and innovation and their impact on sustainability. While these two were treated as separate points in all the interviews. eight of fourteen interviewees felt that both are intertwined, and they kept oscillating between the two points during the discussion. When question was posed about the importance of culture, Interviewee 5 imparted his perspective,

...“culture defines the organisation. Culture defines the principles of what is important to the organisation. And it's basically the pillar that brings the organisation together on a common purpose. So, culture, to me, is a fundamental pillar. It's like building a house.

If you do not have a good foundation, the house can never last long so the analogy works for an organisation as well. Sustainability depends on a strong culture"...

Interviewee 4 offered another important view on culture, according to him,

..."Culture is core because the culture in my view is the soul of an organisation. It is about the employees of the organisation, how they go about you know, driving innovation, driving thought leadership, taking initiative all that drives culture. A strong culture will go a long way in making an organisation resilient. Only resilient organisations can withstand the test of time and disruptions which happen to be the most common thing in the IT services industry"...

Interviewee 11 made another valid point on culture, according to him,

..."culture eats strategy for breakfast. An organisation with a strong and resilient culture can use it as a strategic competitive advantage. Irrespective of how good an organisation's strategy is, a weak or a toxic culture would make the strategy futile"...

There was consensus found among all the interviewees about a positive impact on sustainability when there is a strong positive culture in the organisation. As highlighted in section 4.5 that culture is one of the top 5 characteristics that has positive impact on sustainability of IT services organizations in Singapore.

The next question was on innovation. Ten out of fourteen interviewees felt that innovation will be among the top three factors influencing the sustainability of IT services firms. Many interviewees brought the Singapore context here. Interviewee 10 felt that Singapore as a country believes in "*controlled innovation*". According to him,

...“Singapore is not doing radical innovations. Everything is incremental. So long as they are consistently doing incremental innovation, they are extremely relevant”...

However, Interviewee 1 felt that controlled innovation is a challenge for Singapore. He opined,

...“Controlled innovation impedes out of the box thinking and that does not help IT services organisations handle large tectonic shifts in the industry that happen through disruptions”...

Interviewee 8 also made the following comment on Singapore IT services firms and innovation,

...“Singapore is at the cusp of innovation. They are at the forefront of innovation. Because of the scale not being that huge compared to a lot of western countries or even emerging countries. The only way Singapore tends to look differentiated is by innovation. So, it's about getting concepts in innovation. And you will see it not just in IT services but even in building infrastructure etc, they will break it down and construct something new so that it looks good and leaves you feeling good”...

While all interviewees concurred, that innovation is key to sustainability, there was a divided opinion on controlled and uncontrolled innovation especially in the context of IT services organisation and Singapore. Downs and Mohr (1976), in their critical evaluation of research on innovation, stated that extreme variances have occurred regularly among the findings of the empirical studies of innovation. They added that the variation of results in the field is beyond interpretation, and despite there being many studies, findings have not been cumulative.

Interviewee 3 presented a pertinent point on innovation, according to him, innovation has no bounds and can come across all the characteristics that were being discussed.

They can be implemented in the form of commercial models, it can come in the form of technology and there could be cultural, skill development innovations as well.

He felt that all of these are relevant to and will have a substantial impact on the sustainability of IT services firms. On the aspect of innovation, there was one more interesting observation offered by Interviewee 5,

…..”*A company only has value to the degree that is an effective allocator of resources to create business services that are of a greater value than the costs of the inputs. This is only possible through continuous innovation.”*…….

The leadership style was the next point that was deliberated among the participants. The whole area was so huge that before discussing this aspect, the researcher tried to limit the scope.

The interviewees were introduced to the philosophy of Louise Metcalf which is referred to in chapter 2-Literature review. Leaders and leadership is a key interpreter of how sustainability of the organisation links to the wider systems in which the organisation sits, and executing that link well requires unusual leaders and leadership systems for relevance (Metcalf, 2013), four different leadership styles were considered. The first one is authentic leadership (develop followers towards personal authenticity) and the second one is ethical leadership (try and do the right thing).

The third is transformational leadership (charismatic and stimulated intellectually). The last one is autocratic leadership (coercion and autocratic way of decision making). The interviewees were requested to comment on the leadership style that they thought had a positive or negative influence on sustainability for IT services firms in Singapore. ten of fourteen interviewees clearly stated that leadership is situational, and the leaders must alter their style and implement one of the styles mentioned above while handling different types of situations. Interviewee 3 mentioned that transformational leadership is the best form of leadership for an IT services organisation.

According to him,

...*"IT services firms have to deal with a lot of disruptions and changes. The pace of change is huge and so is uncertainty. Often, the leaders will have to keep getting to the drawing board and deal with the uncertainties. Only a transformational leader can deal with this"*...

A radical statement came from interviewee 8. In his words,

...*"Ethical leadership isn't a separate leadership style if you ask me. It is a given thing. If you are a leader and if you are not doing the right thing, you are not in the right place. I would consider a decent mix of the other three styles for effectiveness"*...

Interviewee 5 called out an additional dimension of trust and transparency as one of the key ingredients of a leadership approach that is relevant for IT services firms. According to him,

...*"Millennials who are the majority of employees in IT services firms appreciate regular feedback, open communication, and positive reinforcement"*...

Interviewee 4 furnished an insight that was very relevant in this context,

...“A challenge facing leaders who work in IT Services organisations is the need to motivate a workforce whose goals are fundamentally different from those of the previous generation. Individuals born between 1984 and 2002 – referred to as millennials make up most of the workforce in many IT services firms in Singapore and have started to assume leadership roles. Global events occurring in their formative years, including the tech bubble burst of 2000 and the financial crisis of 2008, have shaken their faith in the status quo and cultivated a deep distrust of traditional hierarchies and democratic leadership approaches.

As a result, previous ways of engaging, motivating, and retaining employees through financial rewards and other incentives are no longer as effective. Their leadership style at times sounds very autocratic but there is a reason behind that style, it stems from their past”...

Innovation and leadership are among the top 5 characteristics that have a positive impact on the sustainability of IT services organizations in Singapore. These were portrayed in section 4.5.

Further, into the interview, the impact of productivity on sustainability was discussed. The general sentiment around the impact of productivity can be summarized by one of the statements made by Interviewee 1,

...“Definitely there is a correlation between sustainability and productivity as we all know because productivity if it's low and it's going to increase your costs, you know increasing your expenses will challenge an organisation's existence. Sustainability to me is not just about optimized productivity.

It's a lot to do with what image you're carrying in the market. What image your customers have and employees that are going to join you also carry"...

Interviewee 8's perception on productivity was,

..."The only productivity measure is an exceeding level of quality service as perceived by the customer"...

All the interviewees agreed that productivity would have a dominant impact on the sustainability of IT services firms in Singapore. Interviewee 7 talked about the positive linkage between training and productivity. Productivity can only be enabled through consistent training.

No less important is the psychological component of training, which is based on regular basic psychological preparation that forms steady motivation aimed at winning, overcoming uncertainty, the ability to concentrate mental efforts at the right time, and at overcoming anxiety or fear of eminent athletes at a competition (Khadartsev, 2017).

The last aspect that was discussed in this category was the ability to thrive in chaos or self-organisation capability. In today's environment surrounding IT services organisations, chasing certainty is futile.

By the time you get to certainty, the question has changed. Contemporary teams in IT services are highly diverse, widely dispersed within organisations, and digitally connected.

They face frequent changes in group structure, customer needs, and composition because people are less likely to commit to working for one organisation for the entirety of their careers, IT services are always in a fluid state.

Dealing with situations of flux is a very important capability for IT services organisations based on a literature review. While most of the interviewees agreed to the concept that the organisation should be able to thrive in chaos and self-organize to be sustainable, Interviewee 10 came up with an important concept according to him,

..."*I think most people overestimate the chaos. And the firms that are consistently sustainable and stay sustainable over a long period are the firms that are stable and slightly longer-term in their thinking. So, chaos does not need to mean that there is rapid change. We have been talking about the cloud since 2010. Less than 5% of all global workloads are on the public cloud and 10 years have gone. And the total global cloud market for infrastructure is less than 50 billion. The total hardware spending is 1.5 trillion. So, I think there is more chaos in our mind than there is actually in the ground*"*...*

The researcher had a little disagreement with this thought process. In some areas, the change has been anticipated and so has been the chaos and the impact of the change has been minimal, but there are several instances where a small change has thrown a major revenue stream for IT services into chaos. For example, take DevOps, the IT services players were charging their customers based on FTEs (Full Time Equivalents). This was a stable and sizable revenue stream.

This revenue stream took a huge beating with the traditional maintenance revenues almost becoming half (Hiebl, 2018).

This change happened fast, and IT services players took some time to bridge the gap created in their revenue stream (Gartner, 2018). Eight interviewees felt that this characteristic would have an impact on sustainability.

Also, there were differences between different analysts on the exact percentages have been migrated on the public cloud. It is lot higher than five percent (Galov, 2021).

4.4.3.3. Financial Parameters

Two additional characteristics were discussed. They are financial parameters and customer centric. There was just one question on financial parameters, it was a focused one on the financial parameters that the interviewee would look for in IT services organisations. The expectation from this question was that the interviewees would speak on key financial parameters like profitability, R&D spending, or any ratios like Return on Capital Employed, and many others. These parameters were certainly mentioned by most of the interviewees, some new aspects were mentioned. Interviewee 9 is a financial controller and a chief financial officer for IT services firms in Singapore. He gave a clear perspective of what to look for in financial statements. Quoting him verbatim,

...*"People look at only the financials where you can get these metrics straight away and say ok the company is doing good or bad. Just for the period that it tells you. But what I normally do is to start from the chairman's report. Right from the board of directors' report, look at all the initiatives that are driven by the company. How are the fundamental values of the organisation? You start from the first page. What are the things they are doing? How have they performed previously?*

What are the new business models? What is innovation? What are the changes they are bringing to adjust to the changing customer landscape etc? All these statements in the reports albeit being subjective will tell us where the organisation sits.

Then you start looking at their future, where they intend to go, what they would like to invest in, what is their people's focus? What is their technology focus? Where are they making future investments? Which geographies, which customers, which industry segments, and what offerings, all this information will tell us where the organisation will go"...

Interviewee 4 urged the researcher to look at the type and mix of customers, in his view,

..."What is important is the mix of the customer base. Who are their top customers? What is the mix of their revenue from these top customers? What kind of margin are they driving from these customers? So, I think these are two important things because you know this is a very highly competitive industry, IT services business. It is very hard to maintain a good quality margin consistently over years. So, you can only do that if your customer base is very good. If your customer portfolio is such that the customers are in the business where they make money, that's the only time they will give you a decent business with a decent margin"...

Interviewee 5 emphasized the importance of new business models that the firm is driving, and he mentioned that he would investigate commentary around this aspect in their annual report. In his opinion, he would look at the following capabilities,

..."What are you doing strategically and where are you reinventing which will create a new ecosystem of customers? And how sustainable is that in the short and long run"...

Interviewee 10 provided an assessment that was quite similar. According to him, he would look at parameters like annuity business and distribution of their client base across industries. In his observation,

...“So, the first one is what percentage of their business is the annuity. You know in the form of repeatable annual contracts. The second distribution is their client base. Is it leaning towards one or two large customers, is it well distributed across a diverse range of industries”?...

In summary, the interviewees highlighted the following key parameters that have an impact on the sustainability of IT services. These were the factors distilled from the views provided by the interviewees,

- Profitability

- Revenues

- Revenue per customer

- Geographical and industry contribution of the revenue (more diverse, better the resilience of the organisation will be)

- Average Collection period

- Current ratio

- Debt to equity ratio

- Return on Invested capital

- Return on Equity

In addition to the above-mentioned characteristics, a few interviewees talked about a set of new characteristics. Interviewee 14 talked about GRC (Governance Risk and Compliance) reporting and PPP reporting as one of the most important parameters to determine if the organisation will be sustainable. Both these aspects haven't been considered as a part of the literature review and the researcher reports that these are new findings that emerged out of the interviews. Interviewee 2 continued to emphasize free cash flow as the most important financial parameter after Sales and profitability. He also talked about looking at Average Receivable (AR) days to determine how fast the firm is collecting cash from its customers.

The lower the average receivable days is the better the firm is performing according to him. Interviewee 14 mentioned about the brand value (interviewees 2,3 and 8 also highlighted this aspect) . In his opinion,

...*"the brand value of the organisation usually reported in the financial report will play a very significant role in determining the sustainability of the IT services firm. According to their experience, with all things being equal, the customer always selects the firm with a better brand value for a new project. Also, according to them, brand value plays an enormous role in attracting new talent to the IT services organisation"*...

All the interviewees felt that financial parameters are one of the most important characteristics impacting sustainability. Four interviewees perceived these as one of the top three characteristics.

4.4.3.4. Customer centric nature

The last characteristic that was discussed was the views of the interviewee on the customer-centric nature.

All the interviewees agreed that customer-centric nature and ability to provide value to the customer will be a key differentiator for IT service firms and will become an important factor that impacts sustainability. As indicated by Interviewee 1,

...*"That becomes your differentiator. That becomes your service differentiation or trust differentiation"*...

Interviewee 2 indicated,

...*"I think the central purpose of somebody's existence is that somebody is getting value out of it. Even bigger things are willing to talk about it. That's the bigger thing. So, I think the Net Promoter Score will be important to keep companies real. Sometimes, in monopolistic situations or sometimes, you have only three suppliers like say, if you are a telecom player you have only three suppliers. And then options are not many. You know the person will either go, the three are equally bad then, customers have no choice but assuming a perfect competition where any number of companies can exist, customer-centricity becomes important"*...

Interviewee 4 linked the customer-centricity to sustainability in a very cohesive manner. As mentioned by him,

...*"It's a very competitive industry which demands very low margin entry points in business, and you can only make, you know, sustainable profit for the sustainability of that organisation if you have a long-term contract.*

A long-term contract is directly linked to your ability to serve your customers better, make sure that you are passing the benefits of innovation to them, I mean process innovation tools, bringing automation, all that benefit has to be passed into your customers, so that your customers feel that they are getting the value in return of partnering with you over long-term"...

Lastly, Interviewee 12 mentioned that the way customers were consuming the services was changing, so focus on customer success was going to be the key to the sustainability of IT services organisations. Interviewee 3 brought a new concept of "obsession with the customer" to the fore. In his perception, this is the most important measure for any organisation on how customer-centric they are. Based on his view,

..."It is all about having a single point of focus of adding value to the customer's business every day and continuously raising the bar in terms of delivering the services. This improves stickiness and will dissuade the customer to look beyond the supplier organisation. This is what I call a true partnership"...*

4.5. Discussion

As mentioned in the chapter 3, the researcher used word cloud to visualize the data. The researcher decided to build two-word clouds. The first one represented all the factors that positively impacted the sustainability and the second word cloud depicted all the characteristics that negatively impacted the sustainability. The word clouds were generated based on the coded characteristics in NVivo.

Figure 4 - Word cloud 1- characteristics with positive impact on sustainability (developed by the researcher)

From the word cloud depicted above, we derived the top 5 characteristics that impact the sustainability of IT services firms in Singapore based on the perception of the managers who have been interviewed. The characteristics were,

- Leadership

- Innovation

- Vision

- Culture

- Customer focus

In addition to the above-mentioned characteristics, there were several other traits that emerged. Most of these factors were highlighted in the analysis and a few will be alluded to in the next exhibit as well.

The next five were characteristics including, productivity, financial ratios, new business models, learning focus and automation.

The second word cloud is depicted below, and it was based on the characteristics as identified by the interviewees that have a negative impact on sustainability of IT services firms.
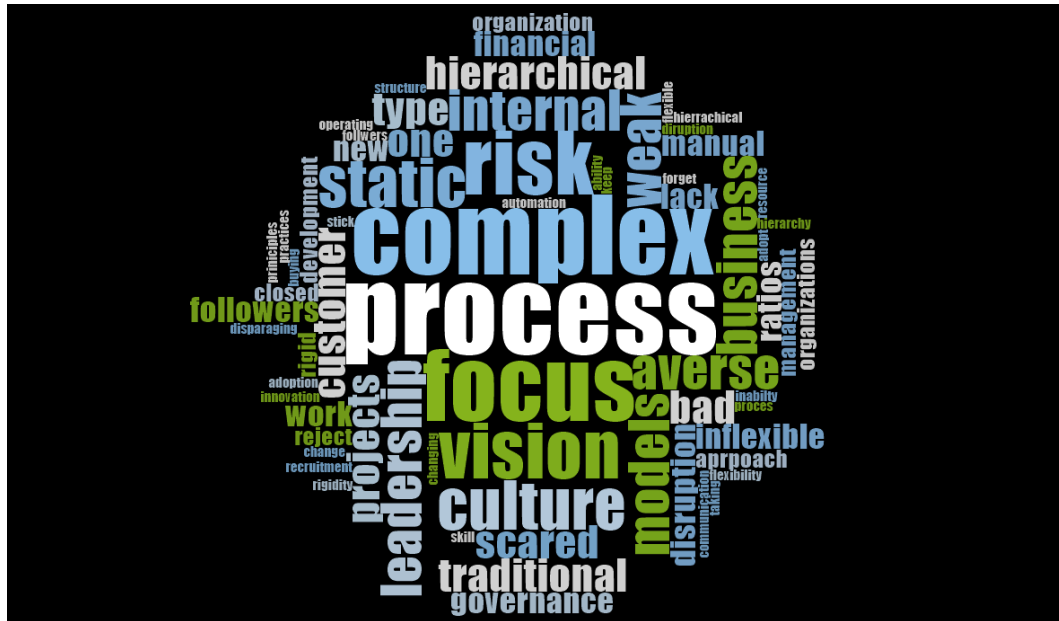
Figure 5 - Word cloud 2- characteristics with negative impact on sustainability (developed by the researcher)

From the above-mentioned word cloud, the top 5 characteristics as perceived by the managers that had a negative impact on the sustainability of IT services firms were,

- Complex processes

- Internal focus

- Lack of focus in the vision

- Static processes

- Hierarchical approach

The above-mentioned characteristics could be treated as ones that were "*top of the mind*" deterrents for sustainability of IT services organisations in Singapore as perceived by managers.

The next five traits were facets like lack of leadership, inflexible business models/approach, hierarchical structure and a complete risk averse approach. There was certainly a consensus among all the interviewees that IT services organisations can't be completely risk averse, instead the interviewees advised them to be "*risk aware*". Interviewees 3 and 14 provided a list of recommendations to determine if an organisation is risk aware or not. They are depicted below,

- Educate all employees about risk.

- Clearly communicate what's expected from employees

- Break down silos and bring common sense of purpose

- Assign responsibility for managing specific risks.

- Establish incentives for proactive risk mitigation

- Leverage technology to measure improvement and increase transparency.

By following the above-mentioned recommendations, the interviewees felt that the organisations could exhibit a risk aware approach. The characteristics highlighted in the word clouds were utilized for building the conceptually clustered matrix and the conceptual model along with the recommendations.

Next exhibit considered by the researcher to bring out findings from the research work was a conceptually clustered matrix. This was alluded to in chapter 3- Methodology. A conceptually clustered matrix was chosen to demystify the lengthy string of research questions (Miles, 2010).

The idea was to cluster the themes and generate a meaning and thereby a conceptual model that could be a theoretical and practical representation of the data.

The conceptually clustered matrix was organized into six columns. The first column comprised the categories of the themes as identified in chapter 4. Currently there are four categories viz. Inherent characteristics, financial parameters, strategic intent and customer centric nature. The second column consisted of the list of codes as identified in the previous chapter. The third column consisted of the impact that each of these codes was proposed to have on the sustainability of the IT services organisation. The impact was categorized as follows

- High – If 10-14 interviewees consider the code as an important factor for the sustainability of the IT services organisations in Singapore

- Medium – If 5-9 interviewees consider the code as an important factor for the sustainability of the IT services organisations in Singapore.

- Low- If 1-4 interviewees perceive that the code as an important factor impacting the sustainability of the IT services organisations in Singapore.

The fourth and fifth columns contained the themes that surfaced out of the analysis on aspects that would have a positive impact and the negative impact corresponding to the code.

For the sake of simplicity and ease, the number of factors was limited to one. In cases where there was more than one theme emerging, the most popular theme (the theme that was mentioned by more than one interviewee was considered). In some specific cases, two inter linked themes were joined to make one overarching theme.

The sixth column represented how easy/difficult it is to make changes to the characteristic. During the interview process, the researcher continued to pose this question on how easy or difficult it is to make changes to the specific characteristic. The perceptions of the interviewees are captured, and the results are reported in the matrix. In a few cases, the interviewee hasn't provided a direct response on how easy/difficult it is; however, the theme was derived by the researcher based on the response provided by the interviewee against the characteristic. The clustered matrix is portrayed below,

Category	Code	Potential impact	Positive impact- factors	Negative impact- factors	Ease of implementation (Easy/hard)
Customer centric nature	New business models	Medium	Agility in adoption	Indifference	Easy
	Focus on customer success	High	Entire organisation's priority	Only a board room talk	Easy
	Customer stickiness	Medium	Value long term association	Too much focus on short term gains	Hard
	Obsession with the customer	High	Put yourselves in customer's shoes	Not part of organisation's core values	Hard
	Quality conscious nature	High	Quality integrated into every process- built in	Quality is just another support function- bolt on	Hard

Category	Code	Potential impact	Positive impact- factors	Negative impact- factors	Ease of implementation (Easy/hard)
Inherent characteristics	Ability to handle uncertainty	Medium	Early detection of disruptions	Content with the "comfort zone"	Hard
	Agility	Medium	Integrated into every process and continuously improved	Only happens with senior management intervention	Hard
	Concern for the planet	Low	Integrated into business processes	State that it isn't relevant for IT services	Hard
	Culture	High	Progressive and positive	Regressive and negative	Hard
	Diversity	High	At all levels in all aspects	No real importance for diversity	Easy

Category	Code	Potential impact	Positive impact-factors	Negative impact- factors	Ease of implementation (Easy/hard)
	Innovation	High	Balance across controlled and extreme innovation	Low or no focus on innovation	Easy
	Leadership	High	Balanced, situational leadership	Extra emphasis on one style of leadership	Hard
	Resource capabilities & skills	High	Focus on continuous learning	Opportunistic learning/ no learning	Easy
	Sound operating principles	Low	Continuously improving	Stagnant and rigid	Easy
	Productivity	High	Easy to measure and improve continuously	Hard to measure, difficult to improve.	Easy

Category	Code	Potential impact	Positive impact- factors	Negative impact- factors	Ease of implementation (Easy/hard)
	Psychological safety	High	Fail fast and learn fast attitude	Fear of failure and self-doubt	Hard
Financial parameters	Financial parameters	High	Sound financial ratios	Weak financial ratios	Hard
	Brand value	Low	Positive brand perceptions	Weak/adversely perceived brand	Hard
Strategic intent	Risk management	High	Integrated with business, risk aware	One pitted against the other, risk averse	Easy
	Project portfolio	High	Harmonized portfolio	Extra focus one type of projects	Easy
	Strength of the vision	Medium	Strong vision backed by sound execution plan	Weak/lack of clarity in vision	Easy

Category	Code	Potential impact	Positive impact- factors	Negative impact- factors	Ease of implementation (Easy/hard)
	Strategic competitive advantage	High	Focus is an important factor	Spreading thin	Hard

Table 17 - Conceptual clustered matrix

The primary objective of the conceptually clustered matrix depicted above was to simplify, distil and demystify the thoughts shared by the interviewees. The researcher in some cases took the liberty to merge a few arguments made by the interviewees and summarized them into a single statement. One facet that was important to consider is the potential impact that is mentioned against each of the characteristics. It may be noted that the measure was purely decided based on the perceptions of the interviewees.

Further elaboration of some of the positive and negative factors highlighted in the above-mentioned exhibit. Customer obsession was discussed in the previous chapter. The key attributes of characteristic as explained by Interviewee 3 were as follows,

- Serve your customers, like this is your last chance and give your best

- Deliver the most compelling customer experience

- Exceed the expectations of our customers every day

- Achieve customer success through exceptional service

Combining all the attributes, the researcher decided to go with the statement- *"putting yourselves in the customer shoes"* as a representative statement for positive impact. On the other hand, if these attributes are not part of the organisation's core values, these do not form part of the muscle memory of the employees, hence that was chosen as the negative factor. Based on the themes that surfaced from the interview, the researcher argues that the potential impact from this characteristic will be high.

The next factor that required a lot of internal deliberation was for the characteristic -culture. As mentioned earlier, this was one of the most debated and commented characteristic and there were diverse views. There were several representations that the researcher could have chosen, however after careful consideration of all the possible options, the researcher decided to select the phrase provided by Interviewee 3- *"progressive culture"*. According to him a progressive culture was one where the culture was deemed worthy of attention all the time. As pointed out by Harrison (2000), culture can make a huge impact in making or breaking an organisation and progressive culture would help improve attitude, values and beliefs in the members of an organisation.

Positivity as mentioned by Interviewee 14 was a very important aspect. He highlighted the same due to his perception that there is a lot of uncertainty and gloom in the IT services industry due to high degree of volatility. He felt that a culture expounding positivity was the need of the hour. Considering these two suggestions, the researcher decided to go with a representative word- *"progressive and positive culture"* as an aspect that provided positive impact. The proposed characteristic for negative impact was self-explanatory. As per the analysis that was performed, the researcher proposed that the potential impact from this characteristic would be high.

Leadership was another area that challenged the researcher to determine a representative statement. The interviewees were introduced to the philosophy of Louise Metcalf that is referred to in chapter 2- Literature review. For the sake of clarity, four different leadership styles were considered.

These definitions were provided to the interviewees prior to seeking their views (the interview process is explained in detail in appendix 3),

- Authentic leadership (develop followers towards personal authenticity)

- Ethical leadership (try and do the right thing).

- Transformational leadership (charismatic and stimulate intellectually).

- Autocratic leadership (coercion and autocratic way of decision making)

This was done primarily to focus the discussion around specific leadership styles that were deemed to be relevant for sustainability based on the literature review. Given that leadership is such a huge topic, the researcher intended to limit the conversations to a specific boundary. The interviewees had quite a few diverse views.

No two interviewees had a similar response for this question, however one common statement that emerged out of the analysis was "*it depends on the situation, the leader must be ready to adapt*". The researcher thus decided to select this statement as a factor that influences this characteristic in a positive manner.

While discussing productivity, many interviewees alluded to having a robust mechanism and framework to measure productivity. The fast growth of the digital economy is generating both vast opportunities (e.g., potential market growth) and daunting challenges (e.g., global competition) in the ICT industry. To maximize opportunities, it is necessary to establish a well-balanced and interactive framework to measure and improve productivity and competitiveness of the software firms (Lee, 2018).

As per the personal experience of several interviewees, the IT services organisations are struggling to keep up with the pace of the changes in the industry when it comes to measuring productivity, Brynjolfsson (2009) also alluded to the same,

"…They are still stuck to the archaic ways of measuring productivity like lines of code per employee or function points per employee. These are not relevant, there are several developments like robotic process automation etc that obviate the need of humans, these must be considered for measuring productivity…"

observed Interviewee 7 who handles delivery of software in a large IT services firm in Singapore. He believed that productivity plays a very important role in improving the sustainability of IT services organisation as it has a direct bearing on the profitability. Any savings will help organisations reinvest into future. Considering these aspects, the statement- "*Easy to measure and improve continuously*" was chosen to represent a factor that influences this characteristic in a positive manner.

As mentioned earlier psychological safety was the new factor that was decided to be added. Edmondson (1999) defined team psychological safety as a shared belief that a team is safe for taking interpersonal risks and found strong support for an association between team psychological safety and team learning behaviour, which in turn was related to team performance. Also, according to Baer (2003) an organisation that has psychological safety can be identified by three important characteristics,

- Employees are free to take risks.

- The people in value others' unique skills and talents.

- As an employee one can bring up problems and tough issues

A few interviewees hence felt that the primary factor that breeds psychological safety in the organisation was lack of fear and fail fast and learn fast attitude. So, the researcher selected fail fast, learn fast attitude as a positive factor.

Strategic competitive advantage was discussed in detail and it was also mentioned that this is one area that every interviewee perceived as a key factor to determine sustainability. There were however varied views on the elements that yield strategic competitive advantage. A few interviewees considered people and their skills, a few talked about innovation and a few alluded to the intellectual property and a few talked about the overall resources of the organisation (not just people) as a key element impacting the strategic competitive advantage. Resource-based view (RBV) theory has been discussed in strategic management and Information Systems (IS) for many years. Most of the research on RBV investigated the impact of resources on competitive advantage (Dwivedi et al , 2012). RBV was discussed in detail and is one of the theoretical models considered for finalizing the research instrument.

Through the conversations, one theme that emerged out of the interviews was focusing on one area and working on it to derive competitive advantage. As Interviewee 14 mentioned,

"….laser sharp focus on one area, it could be technology, domain or even service offering and building unparalleled capabilities in that area is key to deriving strategic competitive advantage. Price isn't a differentiator for IT services especially in a country like Singapore. Only a Competitive advantage can become a differentiator and will help organisations sustain…."

Taking a cue from this statement and several such similar opinions from the interviewees, the researcher has decided to include focus as an aspect that will have a positive impact on sustainability.

Brand value was another characteristic that was included. Brand equity evolves through one's direct and indirect interactions with a brand in environments in which it is sold or marketed (Broyles et al. 2009). A few interviewees identified brand as a characteristic for their decision-making process hence mentioned that it was important for sustainability. Based on the discussions, the researcher argues that a decent or a positive brand value will surely drive customers towards the organisation and consider them as their potential suppliers (Worm & Srivastava, 2014). While this consideration may not guarantee any business to the IT services organisations, it keeps them in the reckoning to address multiple opportunities in the market. Also Interviewee 10 who has an experience as analyst and CEO in the IT services industry mentioned that he would try and promote the brand of the organisation as it helps in customer pull which is a few customers seeking to engage the organisation as a potential supplier and inviting them to participate in their procurement process.

He argued that brand equity certainly helps in closed tender processes which is very common in Singapore to get an entry into the shortlist.

4.6. Conceptual model

The naturalistically oriented data collection methods as well as the approach's theory-building orientation permitted the investigation and theoretical development.

Grounded theory building approach is ideal to study features of life in so-called high technology organisations and Information Services organisations (Gasson, 2009). The nature of strategic decision-making in fast paced environments, grounded theorizing in management and organisation studies did seem to result in action oriented theoretical products (Locke, 2011).

The analysis allowed the researcher to build a conceptual model. The primary factor that guided the researcher was that the conceptual model needed. The variation in the form and shape of their theory purported by the researcher was consistent with Glaser's (1978) ideas that researchers would flexibly draw on and construct frameworks based on the theoretical leads suggested by their data, rather than pursuing the achievement of a theoretical framework. As such, the theory also underscored notions of theoretical elements as 'in process theorizing' that nevertheless served as place markers in understanding about a phenomenon to be simple for any manager to comprehend and it should also provide recommendations that are easier to implement for IT services organisations (Weick ,1995).

As discussed earlier in Chapter 2- Literature review, the researcher decided to utilize the Eisenhower's decision-making matrix as a basis for the conceptual model. The information presented in figures 4 and 5, table 17 was utilised for building the conceptual model.

The researcher utilised the principles from the same framework to help the managers in the IT services organisation. The framework proposed by the researcher borrowed two principles from the Eisenhower's matrix.

The first principle was that it was a two by two matrix (2X2 matrix). The second principle was that it could help managers in the decision making and prioritization process.

The 2x2 Matrix is a decision support technique that plots options on a two-by-two matrix. Known also as a four blocker or magic quadrant.

The matrix diagram is a simple square divided into four equal quadrants. Each axis represented a decision criterion, the decision-making criterion had two attributes and it was desirable that a considerable tension between the two attributes existed. Each axis was divided into two sections (for example low cost/high cost).

For the 2X2 matrix that was proposed for the conceptual model, the researcher decided to use two dimensions. The first dimension on the horizontal axis was the impact. It referred to the impact the specific characteristic had on the sustainability of the IT services organisation. The dimension, impact had two attributes, low and high impact. They represented varied degree of difficulty and impact the specific characteristic had on the sustainability. The dimension-impact was placed on the horizontal axis of the 2X2 matrix.

The second dimension on the vertical axis was ease of implementation. The ease of implementation referred to how easy it was for the managers of the IT services organisation to implement a positive change in the specific characteristic.

This dimension had two attributes easy and hard and they were approximately at the two ends of the spectrum for the dimension.

With the two dimensions and two attributes each for one dimension, there were four quadrants. These were,

- Easy to implement- low impact

- Easy to implement- high impact

- Hard to implement- low impact

- Hard to implement- high impact

The researcher extracted the characteristics from the conceptually clustered matrix. The rationale for determining the attribute was explained earlier in this chapter.

Each characteristic was mapped into the 2X2 matrix. The researcher decided to limit the number of characteristics so that there was a better focus for managers. The researcher chose to select a few characteristics in each quadrant. A minimum of one trait was positioned in each quadrant. In one quadrant (easy to implement, low impact), the researcher positioned three traits and in another quadrant (easy to implement, high impact). The remaining two quadrants (hard to implement, high impact, hard to implement, low impact) had two characteristics each. The total characteristics were eight across all the four quadrants.

The researcher proposes to dive deeper into each characteristic analyse the characteristic based on the perceptions recorded from the semi structured interviews, make inferences based on a structured analysis and the theoretical models reviewed in literature reviews and eventually provide recommendations to managers across each characteristic.

The recommendations for managers are elucidated in section 4.7 of this chapter- Recommendations and overview of the quadrants.

The IT services Sustainability quadrant is illustrated below. The researcher named this quadrant as "sustainability quadrant".
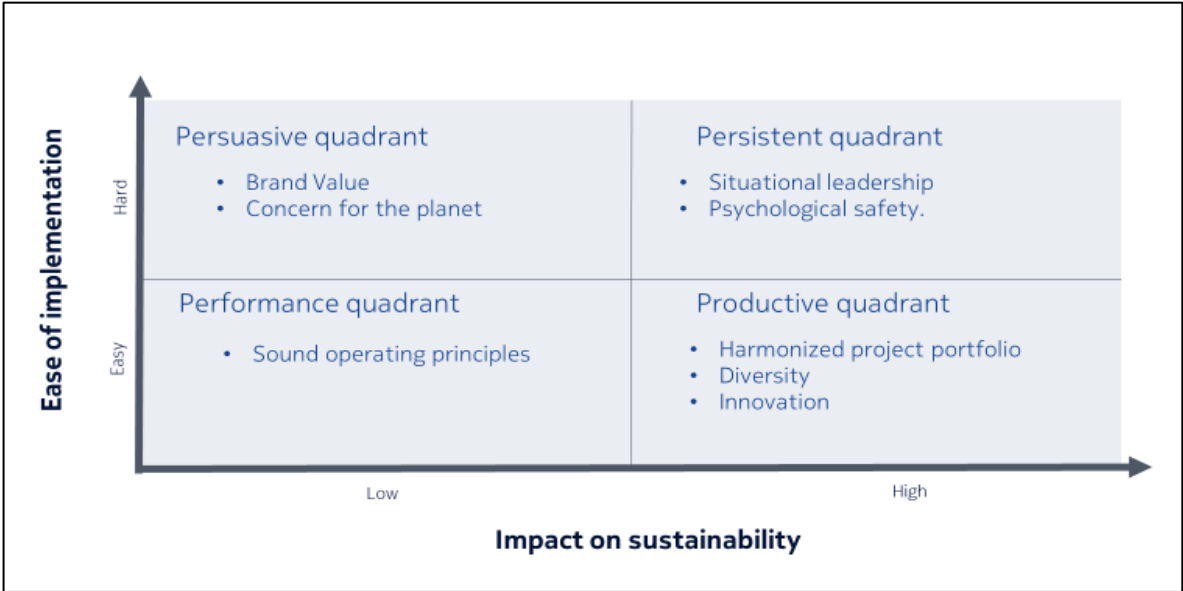
Figure 6 - IT services sustainability quadrant (4P Sustainability Quadrant) (developed by the researcher)

The key characteristics across the four quadrants are summarized below

Category	Easy to implement - low impact	Easy to implement-high impact	Hard to implement-low impact	Hard to implement-high impact
Characteristics	● Sound operating principles	● Harmonized project portfolio ● Diversity ● Innovation	● Brand Value ● Concern for the planet	● Situational leadership ● Psychological safety.
Name of the quadrant	Productive quadrant	Performance quadrant	Persuasive quadrant	Persistence quadrant

Table 178 - Summary of sustainability quadrant

The sustainability quadrant is further enriched with the summary of recommendations against each quadrant and presented later in section 4.7. Majority of these recommendations were constructed in such a way that the managers can implement them as strategic projects within their organisation to improve sustainability of their organisation.

4.7. Recommendations and overview of the quadrants

4.7.1. Productive quadrant

The first quadrant for discussion is "*productive quadrant*". The recommendations are easy to implement and will also yield low impact to the IT services organisations. Singapore' economic policy is business friendly. Organisations in general and IT services organizations in particular will find it easy to navigate with the customer, regulators and even employees, public bureaucracy is very effective, and the government encourages initiatives like digitization (Quah, 2018). This means firms that have structured approach to addressing the business problems will be successful (Vu, 2013). Strong operating principles will result in structured approach and this in turn will aid sustainability and growth of IT services firms.

As pointed out by Dhar (2012), and corroborated by Interviewees 4 and 10, sound operating principles for IT services organisations are represented by the following traits,

- Solid project management practices with an appropriate focus on quality, compliance and security.

- Clearly defined roles for the employees and the organisational units and availability of Key Performance Indicators (KPIs) for performance measurement and improvements

- Ability to reduce the Time to market for all activities and continuously improve the same.

The researcher recommends the IT services organisations in Singapore to inculcate these habits and integrate them into their operational philosophy.

Bringing about change in the operating principles is easy for IT firms in Singapore due to their size of the firms not being big compared to their counterparts in India and USA (BMI Research, 2017). Also, their customers in Singapore are adept in changing their operating model to suit their global customer needs (Jie, 2019). This the researcher argues that this is an easy trait. However, based on the experiences shared by the interviewees, the impact that a change in this trait could make was low.

Although the impact was perceived to be low, the researcher still recommends implementing this trait and continuously improve the operating model as this is a low hanging fruit for IT services organisations in Singapore. Since, it is easy to implement and there are obvious benefits accrued to the organisations like improved profitability and customer satisfaction. These benefits were mentioned by a few interviewees. DM& IS model that was analysed in chapter 2 alluded to strong operating principles.

4.7.2. Persistence quadrant

Staying on the ease of implementation, the second quadrant proposed is the one which is hard to implement and has a low return.

Logical thinking will advise the organisations to ignore this quadrant and deprioritize these characteristics. However, the researcher argues that the two characteristics that find their spot in this category might become relevant in the future and hence recommends that they should not be ignored. A few interviewees (especially the senior leaders of the organisations) recommended the same. The organisations must persist with the implementations of the recommendations provided in this quadrant. Owing to the nature of the action recommended to the organisations, this quadrant is christened as "*persistence quadrant*"

The recent sustainability reporting (SR) mandate by the Singapore Exchange heightened stakeholder awareness and propelled sustainability disclosures (Zhang, 2020). Albeit encouraging, more than half of listed organisations in Singapore do not produce sustainability reports. This signifies a lack of sustainability commitment and concern for planet, or perhaps, local companies have limited understanding on the potential value of sustainability (Loh, 2020).

Loh and Sharmine (2012) also argued that there is a strong correlation between the brand value and sustainability focus of firms. They also mentioned that authentically sustainable brands integrate environmental considerations into their business operations.

A common imbalance was seen where financial and governance factors receive more attention, despite extensive studies validating environmental factors as strong drivers boosting brand value (Mun, 2020). The researcher felt, what needed to be addressed were the corporate vision and values that gave direction to an organisation.

Empirical evidence suggested that sustainability and brand strength have a strong correlation, observed throughout varying industries, organisations across different regions, and enterprise values (Gidwani, 2013; Mun, 2020). IT services organisations are no different, so more concern they show on the planet, better their brand value will be.

Obviously, there are other elements that impact the brand value as many interviewees suggested, facets like the type of customers, financial ratios, levels of innovation, profile of leadership, marketing budgets and many more characteristics impact the brand value of an IT services organisation (Dutta, 2017). As mentioned earlier in the analysis, brand value is just an entry point into shortlist for IT firms in Singapore. The researcher proposes the following recommendations for this quadrant,

- Integrate the philosophy of "*concern for planet*" in the business operations and communicate the same to the external world through sustainability reporting, this is relevant for Singapore.

- Communicate the achievements, capabilities and contributions of the organisation and build a positive brand perception. It will attract both customers and potential employees.

Both the characteristics (building and nurturing the brand and concern for planet) requires considerable organisational resources to be spent, it is hard to improve these characteristics and likely to have a low impact but the researcher argues that both these characteristics will have a long-term impact on the sustainability of the organisation and must be pursued with a decent level of aggression.

The suggestion is that the organisations should pursue the recommendations in this quadrant as they will be of great help in future. Also, the researcher argues that both the recommendations have a causal relationship.

Futerra sustainability communications (2016) suggested that focusing on the characteristic, concern on the planet will result in a better brand value for any organisation.

This is more relevant especially for IT services organisations who employ individuals who are intellectually stimulated. Concern for planet also will yield better productivity (in terms of better use of the organisational resources like water, electricity etc) and improve the profitability of IT services organisations (Jie, 2019). The researcher would also like to point out that concern for environment is one of the key areas of focus for many reputed organisations like google, Facebook etc. Sustainability has been a core value since Google's founding, and they strive to build sustainability into everything they perform. In 2018, Google achieved twelve consecutive years of carbon neutrality and, for the second year in a row, matched 100% of the electricity consumption of their global operations with renewable energy (Pichai, 2021). Several such examples exist among global firms. The researcher would like to make following three recommendations for IT services firms to improve their concern for planet,

● Integrate concern for planet and eco-friendly policies in every function of the organisation, starting from supply chain, real estate management to even corporate governance.

- Seriously consider PPP (People, Planet, Profitability) reporting and be open in reporting the carbon footprint, set aggressive yet achievable goals for reducing the carbon footprint and follow the initiatives religiously.

- Concern for planet as a philosophy must be driven top down and must be one of the important KPIs for the CEO.

4.7.3. Performance quadrant

The next quadrant could have a significant positive impact on the organisations. It has three characteristics. It is the most important quadrant; this is the quadrant where the IT services firms can obtain maximum benefits. The characteristics are easy to alter and improve based on the recommendations and the positive impact that these characteristics will have on sustainability is high. The performance levels will drive the organisations towards sustainability at a faster pace, hence this quadrant is named performance quadrant.

As argued by Barney (1992) in his RBV, diversification research posits that related diversification can lead to superior firm performance, compared to that of a focused strategy, because firms can maximize their resources across several businesses to realize additional returns. He also stated that operational economies of scope as afforded by related diversification facilitate a firm to assemble a portfolio of businesses that are mutually reinforcing, as critical resources can be shared among business units. Barney (1997) & Markowitz (1987) also proposed diversification of portfolio of projects as explained earlier in the literature review.

The researcher proposed to extrapolate apply these two theories to the portfolio of projects executed by the IT services firms. As expounded earlier, the IT services firms must have a harmonized mix across the three types of projects transactional projects (projects that support daily operational tasks of the customers), transformational (projects that support long term decision making, business ideas of the clients) and strategic projects (projects that re-position and maintain the firm's market).

As mentioned in the analysis, there was no consensus among the interviewees on the ideal mix, but the COVID 19 pandemic that impacted the entire global and Singapore business climate including the software services business (Govtech, 2021). Organisations reduced or stopped the transformation projects to stay afloat, they have reduced the spending and resorted to automation on transactional projects (Kamal, 2020). However as per the report from Economic Development Board of Singapore, firms have increased the investment to preserve their market e.g. the restaurant chains and a few other businesses have started investing in building their digital presence so that they can continue their business. This had a positive impact on a few IT services firms that build mobile applications and ecommerce applications (Channel News Asia, 2020). This clearly showed the need for IT firms to stay engaged in strategic projects. The researcher thus recommends that the IT services firms should have a harmonized portfolio of projects with an increased emphasis on the strategic projects.

The second characteristic was diversity. This was one characteristic that solely emerged from the interviewees. This did not transpire from the literature review. The higher the interviewees were in the hierarchy of the organisation, the more emphasis they laid on this factor.

Diversity is defined as the practice or quality of including or involving people from a range of different social and ethnic backgrounds and of different genders, sexual orientations, etc (Chidambaram, 2004). As highlighted by the interviewees, the researcher distilled five specific advantages of diversity in IT services organisations,

- Improved creativity.

- Improved employee engagement.

- Reduced employee turnover.

- Wider range of skills.

- Improves cultural insights.

All the above will have a positive impact on the productivity and financial parameters of an organisation. Singapore attaches a huge importance to diversity as quoted by Prime Minister, Mr Lee Hsien Long,

"….Singapore is not a melting pot, but a society where each race is encouraged to preserve its unique culture and traditions and appreciate and respect that of others. No race or culture is coerced into conforming with other identities, let alone that of the majority…."

It is evident that diversity forms an integral part of Singapore's cultural and business fabric. The availability of diverse workforce to recruit from also helped this cause. The concept of diversity can be further extended into the customers as well, where the IT services firms are advised to seek diverse range of customers and service offerings.

The researcher however argues that this isn't in the control of the organisation and hence may not be possible to be implemented fully. The researcher recommends that the IT services organisations look at their employee mix, integrate diversity principles into their organisation structure and ensure that there is a decent level of diversity so that they can be sustainable as an organisation. As the interviewees suggested, the diversity related KPIs must be integrated with the performance KPIs for managers at all levels. Researcher is of the opinion that this itself is a huge area for research.

The third characteristic in this quadrant is innovation. The topic of incremental innovation was discussed in the context of Singapore, further Singapore's advanced IT infrastructure, stringent Intellectual property protection laws as well as highly skilled talent pool aid in the aspect of innovation (Singapore Government, 2018). The most recent Global Talent Competitiveness Index published by the Human Capital Index Institute of INSEAD ranked Singapore second in the world and the only Asian country in the top 10 when it comes to attracting talent. As per the communique from Intellectual Property office of Singapore, the 2020 Bloomberg Innovation Index, which scores economies using factors including research and development spending, manufacturing capability and concentration of high-tech public companies, ranked Singapore third in the world.

The Global Innovation Index 2020, which ranks countries' innovation performance, ranked Singapore as the eighth most innovative nation in the world and top in Asia.

Singapore maintains its lead as first in the world on the Innovation Input Sub-Index of the Global Innovation Index 2019, which gauges elements in the national economy that enable innovation activities. Innovation is synonymous to Singapore and its ethos (Quah, 2018).

The recommendation from the researcher is to integrate innovation into the day-to-day activities and thrive on innovation across service offerings, business models, delivery models and quality assurance.

Over the last few years, the term "*frugal innovation*" emerged and became associated with sustainability. It is derived from frugal engineering which was coined by Carlos Ghosn from Renault and Nissan.

He defined frugal engineering as a framework that achieves more from less resources and believes "*west*" can learn from countries like India (Ghosh, 2007). Many definitions have been purported for frugal innovation but the crux of the concept to reduce the complexity and cost of production. This concept was referred in chapter 2. This is very relevant for IT services where the lion's share of the cost of production is "*people*". By employing methods of frugal innovation, many IT services firms have improved their bottom-line considerably. Concepts like recruiting non-STEM (Science, Technology, Engineering and Medicine) graduates and training them, crowd sourcing and even Robotic Programming are just a few illustrations of this concept.

The three proposed recommendations from the performance quadrant are summarized below,

- IT services firms should have a harmonized portfolio of projects with an increased emphasis on the strategic projects.

- Ensure that the employee base has a decent level of diversity and integrate diversity into the organisation structure.

- Integrate innovation into the day to day activities and thrive on innovation across service offerings, business models, delivery models and quality assurance. Consider frugal innovation approach.

4.7.4. Persuasive quadrant

The last quadrant that is elaborated further is the one which yields high impact but is also difficult to implement. The researcher also opined that bringing about improvement/change in these characteristics is a long and arduous journey for the IT services firms.

However, the impact these characteristics can make is high and hence a path worth the pursuit for the IT services firms in Singapore. The IT services firms must be continuously persuaded to implement these recommendations; hence the quadrant is named- persuasive quadrant.

The sixth president of the Republic of Singapore, S.R. Nathan, talked about leadership and innovation as the key foundation stones in Singapore's growth (Srivastava, 2014). The belief among the business and bureaucratic circles of Singapore is that leaders have got to do the right thing, given the circumstances, and prioritise what is important for society and business.

They are required to keep a positive mind set especially during adversities. This particular trait has been put to test for many business leaders in 2020 with the COVID 19 pandemic situation coming to the fore. Many businesses became unsustainable and many had to resort to unprecedented means to stay afloat.

The pandemic also had a significant adverse impact on businesses in Singapore including IT services. The leaders and their philosophies were tested (Kamal, 2020). Given this experience, the researcher proposes situational and positive leadership. We discussed the different types of leadership styles in section 2.4.5 (ethical, authentic, transformational and autocratic) and proposed that the leadership style depends on the situation that the leader is confronted with. The views from the interviewees corroborated this approach. The recommendation from the researcher is to inculcate and promote situational and positive leadership to make the organisation more sustainable.

The characteristic – psychological safety did not emerge from the literature review; this trait was included based on the guidance provided by the interviewees.

A study performed by Singapore Management University revealed that in order to construct the ideal environment for teamwork, three key drivers of psychological safety must be in place – behavioural integrity of leaders, organisational support and healthy relationship networks. When trying to foster a psychologically safe environment, leaders in Singapore, must pay close attention to relationship networks because it has the largest impact on psychological safety.

Behavioural integrity of management and organisational support are also significant predictors, albeit with a smaller impact on psychological safety (Smith, 2018). Tan and Smith (2018) also argued that once established, a high level of psychological safety among employees and teams results in a greater sense of organisational pride and the perception of a great place to work.

Over time, this can strengthen the degree of commitment, motivation and the ability of employees to take on the risks and challenges that will arise in workplaces of the future (Carmeli, 2008). With these theoretical aspects and the interviewee guidance, the researcher proposes to IT services organisation that their managers need to be discerning and integrate the philosophy of psychological safety into the organisational culture. The summary of recommendations for this quadrant are listed below,

- To inculcate and promote situational and positive leadership.

- Managers need to be discerning and integrate the philosophy of psychological safety into the organisational culture.

The final "*sustainability quadrant*" that is a conceptual model from the researcher's study is depicted below. It included the 2X2 matrix and the corresponding recommendations that are summarized. This is the final output of the researcher.
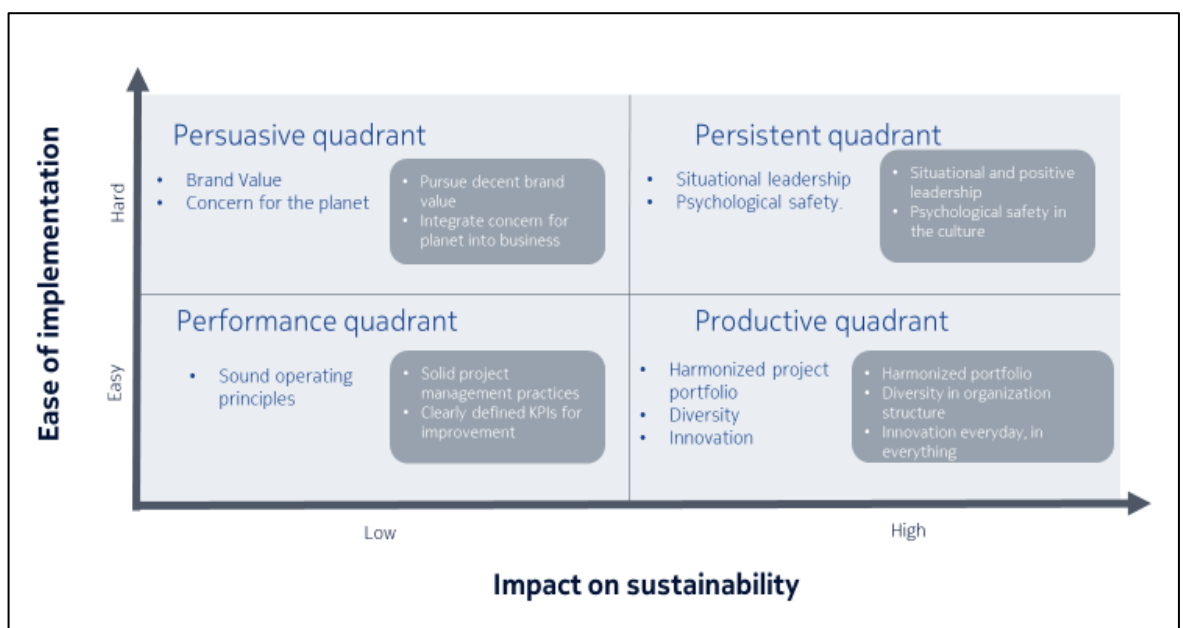
Figure 7 - Sustainability quadrant with recommendations (developed by the researcher)

The above mentioned 4P sustainability quadrant was derived based on the perceptions that the interviewees shared through the process of semi structured interviews. It may be noted that the sustainability quadrant considers the three Ps (people, planet and profitability) of the TBL. Each characteristic and the corresponding recommendation maps back at one or more of the dimensions of the TBL. The table below maps the characteristics to the three Ps and also key theoretical frameworks that were identified during the literature review.

Quadrant	Characteristic	Theoretical framework(s)	TBL dimension(s) the characteristic addresses
Persuasive quadrant	Brand Value	Gidwani (2013)	Profitability
	Concern for planet	Bansal (2005) & Elkington (1997) TBL	Planet
Persistent Quadrant	Situational leadership	Crossan leadership principles	People
	Psychological safety	Edmonson (1999) & Baer (2003)	People

Quadrant	Characteristic	Theoretical framework(s)	TBL dimension(s) the characteristic addresses
Performance quadrant	Sound operating principles	Barney's RBV (1992), Dhar (2012)	Profitability, people
Productive quadrant	Harmonized Project portfolio	Markowitz's ITPM (1952)	Profitability
	Diversity	Markowitz's ITPM (1952)	People
	Innovation	D&M IS Model (1992)	Profitability, people

Table 19 – Mapping of characteristics in Sustainability quadrant to PPP dimensions of TBL framework and other theoretical frameworks analysed through literature review

Once the recommendations are provided to the managers, the researcher felt that there is a need for managers to prioritise the recommendations as well, given the scarcity of resources that all managers are experiencing today in the IT services organizations across the globe (Vu, 2013). The proposed order and timeline for the implementation is depicted below. The order of implementation is suggested based on a logical approach with a focus on rendering maximum benefit to the organisation with minimum resources.

In the previous sections of this chapter, the researcher explained the relevance of the four quadrants and the suggested order in which the recommendations might be implemented by the managers.
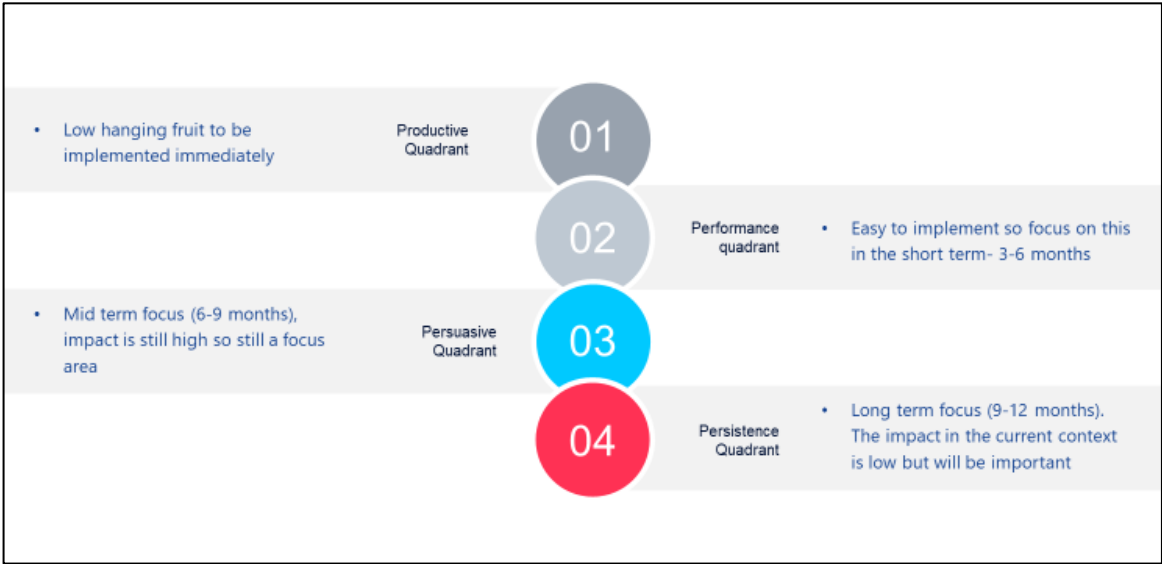
Figure 8 - Proposed timeline and order of implementation (developed by the researcher)

The researcher proposes that the IT organisations start with implementing the recommendations in the productive quadrant immediately. The researcher applied the principles suggested by Orlikowski (1996) around defining the timelines (short, medium and long- terms in ICT sector), the same were applied to the proposed timelines for implementing recommendations across multiple quadrants. The short-term focus must be on performance quadrant followed by the persuasive quadrant in the medium term. IT organisations are forced to ignore the recommendations in the persistence quadrant due to resource shortage and other extraneous reasons, however the researcher strongly recommends that IT organisations pursue these recommendations for them to be able to differentiate against others in the long run.

4.8. Chapter Summary

The concept of sustainable development has gained global importance over the past ten years (Schaltegger, 2011). In response to this worldwide focus on sustainability, higher education institutions have engaged in incorporating and institutionalizing sustainability into their curricula, research, and operations in order to educate future sustainability professionals as change agents for sustainable development (Barth, 2012). These change agents develop sustainability as a factor of success in their working environment, integrate sustainability criteria into business processes, and transfer the vision of sustainable development to society (Hesselbarth, 2014). In this line of thought, education for sustainable development (ESD) aims at enabling people to "not only acquire and generate knowledge but also to reflect on further effects and the complexity of behaviour and decisions in a future-oriented and global perspective of responsibility" (Blödt et al. 2012).

These skills, attitudes, and knowledge likely stem from individual competencies for sustainable development. In general, competencies are described as enabling successful task performance and problem-solving concerning real-world problems, challenges, and/or opportunities (Hidalgo & Fuentes, 2013) on an individual level and consist of knowledge elements, skills, and attitudes (Osagie et al. 2016) Over the past few years, individual competencies for sustainable development have received much attention in the education for sustainability literature. Significant progress has been made in conceptualizing key competencies for sustainable development (Brundiers et al. 2020). Competencies such as foresighted or anticipatory thinking, systems thinking, interdisciplinary work, and participation are considered as key competencies that warrant (additional) attention in higher education.

Critical questions can be raised regarding the conceptual nature of these studies as they lead to rather abstract academic descriptions of competencies (Le Deist & Winterton, 2005). Furthermore, competence descriptions from the education for sustainability literature are usually decontextualized because competence lists are meant to study program overarching, crossing various educational contexts and curricula. The reality, however, is that sustainability challenges and tasks often become meaningful in one's specific work environment. Therefore, the work context is also an important factor to consider in the field of sustainable development. The researcher has performed the data collection utilizing the semi-structured interviews, performed the three-step coding process including open coding, axial coding and selective coding. Finally arrived at the list of codes that would be considered for building the theoretical model. This completes the analysis phase of the data. The researcher in the next chapter plans to elucidate on the findings based on the analysis. The results of the same will be presented and evaluated for providing suggestions and framework for the study conducted.

This also chapter analysed the data that was synthesized using grounded theory. The chapter also presented the data collected in the form of a word cloud and a conceptual clustered matrix.

These helped simplify the concepts and visualise the messages emanating out of the data. Using the conceptual clustered matrix and word cloud as inputs, the researcher provided the final conceptual model in the form of a 2X2 matrix.

This 2X2 Matrix named sustainability quadrant depicted various characteristics that influenced the sustainability of IT services organisations in Singapore based on the perceptions of the managers.

The sustainability quadrant also provided recommendations to managers across each quadrant for consideration. If implemented, the researcher is of the opinion that these recommendations will aid improve the sustainability of the IT services organisations. These recommendations are reasonably specific for the context of Singapore; however, he same can be extended to the IT services organisations in other geographies as well. The researcher will provide the concluding arguments and also highlight his contributions to theory and practice in the next chapter

5. Conclusions

5.1. Introduction

In the previous chapter, the researcher analysed the data, presented the findings in a structured format and provided management recommendations. In this chapter, the researcher summarizes and reiterates the importance of organizational sustainability for IT services firms and also summarizes the research's contributions to theory and practice. Complexity, Obscurity, and Instability are the words that sum up the current business landscape which is endlessly fluid and continues to change at a rapid pace (Highsmith, 2013). Researchers have found that communication plays a vital role in improving the productivity of IT service organisations (Oluwatayo, 2019). To add to this ordeal, in 2020, a once-in-a-century pandemic turned our world upside down. Every industry and company and all lives were equally upended. Some industries bore the brunt of this impact much more than the others (Kamal, 2020). When the researcher envisaged the current area of research, to investigate the key factors that influence perceptions of managers impacting the sustainability of IT services organisations located in Singapore. The primary objective of the study was to contribute to the IT services organisation fraternity considering the volatility of the organisations. With this, the researcher imagines that sustainability would become such an important factor in today's context. Given this context, the lack of management literature around the sustainability of IT services firms, managers in IT firms often must contend with a host of multifaceted factors that will influence the sustainability of their organisations.

For instance, they may have to set the organisation off on a pursuit of new technology and launch projects in the same even before the new technology is fully understood. They must be agile enough to navigate and adapt across cultural and geographic lines as well as, determine new organisational structures and capabilities through anticipating the growing needs and demands of their customers.

Therefore, it is of essence that managers integrate the thought process of striving for sustainability in their day-to-day business management.

5.2. Discussion

As a part of literature review, the researcher has identified four main theoretical models and they were discussed in detail through the literature review chapter. The models were,

- DeLone and McLean model for IS success (1992)- This model tried to analyse six dimensions like systems quality, information quality, service quality, user satisfaction, intention to use, and net benefits. These dimensions included the process of validation of this model through structural equation modelling for checking the possibility of the impact (Bahaddad, 2017).

- Edward Lorenz's chaos complexity theory (1969)- The theory behind using this study was to discuss the process of defining chaos theory as similar to trying to grasp the idea of organisation and attempts made to implement sustainability in the organisation (Bloom, 2000).

- Markowitz's portfolio theory (1952)- This theory was used for developing optimal portfolios for complex problems that require predictions about the current state of the assets (Kellner, 2019).

- Barney's resource-based theory (1992)- The resource-based theory lacks the insights provided by creativity and the entrepreneurial act. The theory was mainly used to examine the intersection between entrepreneurship and the resource-based view (Hitt et al. 2001).

In addition to the above-mentioned theoretical models, the researcher also analysed additional concepts including enterprise risk management, productivity, culture, innovation, leadership approach, financial parameters and customer success.

The primary challenge for the leader is to analyse the literature from the context of their applicability for sustainability of IT services organisations and further their validity for the IT services organizations in Singapore. Based on the analysis and the philosophical stance of the researcher, the method and methodology were finalized. The researcher decided to opt for a semi-structured interview as the method and the research instrument was constructed out of the data from the literature review.

The data was analysed utilizing grounded theory purported by Glaser and Strauss (1978). The data was also structured, synthesized and presented in the form of two-word cloud models and a conceptually clustered matrix. Utilizing the conceptual cluster matrix and word clouds (figures 4 and 5) as the basis, the researcher constructed the final conceptual model which was a sustainability quadrant (figure 7). The sustainability quadrant helps as a

practical guide for managers in the IT services industry in Singapore to prioritize and focus on areas that have a considerable impact on the sustainability.

The researcher urges the managers to implement the recommendations elucidated in the sustainability quadrant and the researcher has also provided a specific order in which these recommendations can be considered.

This has resulted in two key achievements. First, the achievement of building and developing the sustainability quadrant – a multi-dimensional framework and a possible tool for managers that enables them to effectively leverage the recommendations to improve the sustainability of their firms within Singapore. Second, the research also identified the relevant theoretical concepts that will influence sustainability of IT services firms. We will discuss these achievements by examining the contribution that they make to both academia and practice, the philosophy, benefits and value of sustainability quadrant as well as, the possibility to build on the outputs of this research.

5.3. Research contribution to academia

This research set out to attend to specific concerns raised by the researcher on absence of specific literature focused on sustainability of IT services sector,

- The dearth of studies on IT firm's sustainability and even the research on It firms is highly US centric with limited focus on Singapore. The researcher argues that there is a need to conduct more research with focus on IT services organizations in Asia and link the area of sustainability to IT services.

- A few studies that were found by the researcher have utilized quantitative techniques to analyse specific aspects like firms and even individuals.

Not many studies have performed qualitative research in the area of IT organization's sustainability.

- The researcher opines that there is a need for an empirically grounded theory to explain and analyse the perceptions of the managers who are involved in the IT firms and synthesise the data into a theoretical construct.

- An integrated, simple and easy to use framework that provides a holistic and integrated list of recommendations to the managers in the area of sustainability.

The research addressed the above-mentioned issues and offered an original and substantial contribution to academia in the following areas,

The researcher interviewed fourteen managers/leaders from IT services organisations who are employed at different levels.

The first notable contribution of the research is that it employed a Grounded theory utilising open coding, axial coding, selective coding and content comparison (Gasson, 2009). This method enabled the data to be grounded in real experiences and new insights into the understanding of social processes emerging from the context in which they occur. Also, by employing an iterative process it provided the researcher with an opportunity to continuously revisit the data for any specific themes till the theoretical saturation was achieved. This feature was a key differentiator of the research.

The second contribution of this research is that it covered managers at multiple levels starting from CEO to a delivery head, it also covered a cross section of managers across different functional disciplines viz. sales, operations, delivery and finance, further these managers have been selected from firms of different

sizes. The researcher proposes that this study offered a '*big picture*' view of perceptions on sustainability that is not hostage to one level, functional discipline, or one company's way of being and doing things. As such, the findings are applicable across IT services industry.

The third contribution to academia is that the research converted the knowledge that emerged from both the literature reviews and the findings into a practical tool. Sustainability quadrant is a tool that is constructed based on practical experiences of managers in the IT services organisations. It considers key drivers for sustainability and positions a set of recommendations and prioritises them within a commercial frame.

More so, the model can be operationalised and extended to IT services organizations within any country in Asia with a few tweaks. Thus, the model offers a level of abstraction and utility across IT services organizations in Asia.

Lastly, this study would instigate researchers to conduct more qualitative studies to distil and synthesize the experiences of managers and perform inductive research in this area.

5.4. Research contribution to practice

It is intended that organisational research (particularly from a DBA programme) should convert at least some of its findings into practical management tools. As such the contribution of this research was to develop a tool that can be applied in the business environment – the sustainability quadrant. is a pragmatic tool that has been developed through the extensive reach of this study and therefore provides managers of IT services organisation with the opportunity to understand how they can operate more effectively and efficiently towards

ensuring that their organisations become sustainable. This is the first valuable output of this research – the output was founded on practical experience and reach. The list of management recommendations emanating from the sustainability quadrant is provided below. These were highlighted in figure 7- sustainability quadrant

Quadrant	Characteristic	Management Recommendations
Persuasive quadrant	Brand Value	Pursue brand value
	Concern for planet	Integrate concern for planet into business
Persistent Quadrant	Situational leadership	Adopt situational and positive leadership
	Psychological safety	Psychological safety in the culture
Performance quadrant	Sound operating principles	Solid project management practices Clearly defined KPIs for improvement
Productive quadrant	Harmonized Project portfolio	Harmonized project portfolio
	Diversity	Diversity in organization structure
	Innovation	Innovation integrated into everyday activities, in everything

Table 20 – Summary of Management recommendations- researcher's contribution to practice

The second valuable output stemming from the research was, it provided leaders/managers of IT services organisations in Singapore with a workable tool. Sustainability quadrant positions a set of recommendations for consideration within a change management framework of an organisation.

This 2X2 matrix (4P Sustainability quadrant) was a result of the analysis that was performed across several characteristics like culture, innovation, systems, processes and performance outcomes of an IT services organisation so that managers in Singapore have the tool to leverage recommendations in such a way that has a practical application and made sense for the organisation. managers can align their sustainability efforts across all organisational elements so that it becomes a way of working and being.

It operationalises a sustainability agenda that is aligned to the key elements of both organisational and managerial performance.

The 4P sustainability quadrant also enables leaders to prioritise, focus and tailor their sustainability activities to meet their changing organisational needs.

The third valuable output was that the research provided a structured approach to achieving/improving Sustainability. Sustainability of organisations must be addressed from a structural, cognitive and behavioural perspective and thus is more likely to be embedded and aligned to organisational activities and thus inherently support processes, structures and systems to impact overall business performance (Bansal, 2014). Thus, the organisation is continually learning and becomes sustainable.

5.5. Sustainability quadrant- Philosophy, benefits and value

Ours is an ever-changing world, but the degree of change today is greater than has ever been known (Komo, 2007).

Accordingly, there is value in understanding the strategies, techniques and approaches used by people from the firms that have demonstrated Sustainability in times of turbulence (Lopes et al. 2016) The research exercise intended to capture those invaluable experiences.

The key achievement of the research and where it adds value existed in the philosophy of the sustainability quadrant which is to examine the impact of a few characteristics on sustainability so that a set of recommendations could be mapped to organisational objectives, activities and learning that would drive the implementation of the recommendations. Thus, it emphasised a move away from a singular focus on one or two known elements such as leadership and/or innovation towards a broader focus that includes cognitive and behavioural elements like diversity, psychological safety, operating principles etc as well.

The intention was to facilitate buy-in, engagement and commitment from all managers by making the strategic story for sustainability real and enabling leaders to amplify their performance by establishing a compelling organisational and personal rationale for achieving sustainability. This meant that leaders must be conscious of, and demonstrate commitment to, thinking and being on several levels whilst at the same time coalesce key organisational elements towards attaining sustainability (Oxfam, 2017).

The second value-adding achievement of this research was in the practical application of the concept- concern for planet.

The research tried to elucidate on the importance of showing concern for planet for the IT services organisation. He highlighted the immediate and long-term ramifications from immediate benefits realised by the IT services organizations to integrating this characteristic into the culture.

The main benefit of this approach was to help managers think about aspects like TBL (Triple Bottom Line) and how they can be applied to the context of IT services organisations. The researcher was able to record experiences and guidance from the interviewees in this sphere. One of the important observations was that only leaders at the higher level of the organisational hierarchy seem to be concerned about the planet. This demands a radical change in the approach and this recommendation will go a long way in changing the ethos and the behaviour of IT services organisation. Improving concern for planet will have a positive impact on their brand as well as on the society (Pichai, 2021).

The researcher identified a few new characteristics that were perceived to have an influence on the organisational sustainability of IT services firms. Characteristics like psychological safety and diversity emerged through the analysis of the data provided by the interviewees. The researcher discussed these at length.

These were included in the sustainability quadrant as well. The researcher also analysed several new characteristics like automation, governance and debated these concepts in detail.

The researcher managed to link different theoretical perspectives to the practice, four main theoretical models were considered along with a few theoretical concepts, these theoretical models were eventually linked to the recommendations, thereby offering well rounded solutions.

Linking theory to practice lends fortuitously towards better ways of deriving new practical models so that theory and practice can coexist harmoniously (Dudovskiy, 2019).

Lastly, by seeking and committing to strategic alignment with sustainability philosophy and principles, leaders demonstrate their commitment to the attainment of business goals in the short term and longer term as well. The findings and the philosophy of the sustainability quadrant will help leaders take these steps in a structured and systematic manner.

5.6. Scope for further research in this area

This has been an exploratory study, the results of which can only be applied within the context of the perspective of the fourteen participants who were interviewed. However, the results did have meaning in terms of creating a greater understanding of the operating assumptions, framework, and guiding principles for various managers/leaders employed in the IT services organizations in Singapore on sustainability which is key to performance in external business environments exhibiting turbulence.

The results of this study can trigger interest from other doctoral candidates and managing consultants in further exploring (either within an organisation, an industry or a broad-spectrum comparative study) any of the study constructs. Other possibilities for future research in this area include,

- The current research captured only the perceptions of the mangers around sustainability specific to the Singapore geography. The socio-political system and the economic policies do have an impact on the sustainability. This research framework could be replicated for other countries as well. E.g. the same approach can be adopted to understand the factors influencing sustainability for IT services firms in Australia or India. The approach can be further generalized and extrapolated for global IT services organisations.

- A high-level perspective was provided on each of the characteristics, further research can be carried out to determine the impact of each individual characteristic on sustainability. E.g. investigate the impact of leadership (or innovation or psychological safety) on sustainability of IT services firms based on the perceptions of managers. Through this process, a detailed view of characteristic specific recommendations could be worked out and proposed.

- A study could be carried out on other contributing factors to sustainability of performance within a single organisation (identifying a larger participant pool within the organisation) or within multiple firms within a single industry or across industry disciplines.

- The researcher would personally like to pursue the importance of the characteristic "*concern for planet*" for the sustainability of IT services organisations. This research will help bring out the key reasons as to why concern for planet will be of great value for IT services organisations' sustainability plans. There is a need to change the policies and reduce the "*digital garbage*" that is being created.

- Finally, a cross section of geographies may be selected, and the researcher could select either one characteristic or a group of characteristics to ascertain their impact on sustainability. The same framework could be effectively expanded to other industries as well.

This study found commonality and agreement among the participants in several areas (leadership style, culture, innovation etc) as well as disagreements around factors influencing sustainability (portfolio of projects, financial ratios, ability to deal with uncertainty etc). Both examples are illustrative of how future researchers could take the findings from this study as indicative of a research problem/issue and explore it further.

5.7. Methodology related issues

A criticism often imposed at qualitative research is the lack of robust statistics that can be tested for validation and reliability (Dey, 1993). However, the researcher firmly believed that the qualitative methodology used in this research enabled the identification of the rich contextualised detail of the characteristics that had an impact on sustainability of IT services organizations in Singapore. A quantitative survey would have missed the powerful way that current experiences were shaped.

Notwithstanding the advantages of a qualitative approach suggested above, the researcher acknowledges that there are a few methodological issues in this research that need to be deliberated upon.

The first was in the problem of translation in measurement. implies, the researcher could not ensure that all interviews interpreted perfectly and/or all interviewees understood questions similarly even when the researcher tried to reframe and reiterate questions to enable a clearer understanding. This was primarily due to the interviewee's experiences and their comprehension of the subject and their experiences.

Also, due to the complexity of undertaking qualitative research with a specific set of competencies required in the interviewees, theoretical sampling was not an option. The researcher resorted to the purposive sampling and hence there are likely to be some biases, further the sample may not be a true representation of the population in its entirety. In practice, however, a researcher working with real people rarely has an opportunity to implement text-book theoretical sampling processes due to problems in gaining access to various people, where some of them are in a senior positions in their organisations and time restrictions of participants in tandem with deadlines set for the thesis.

The final methodological issue was that qualitative methods were susceptible to a researcher bias as grounded theory places the main researcher in a central role in the analysis (Milliken, 2010). That implies, the researcher was the primary analyst and creator of the important categories of the grounded theory.

In addition to this, as all interviews were conducted on a one-to-one basis, they were open to individual interpretation and subsequent interviewee bias which minimises the emergence of collective interpretations.

In conclusion, the researcher applied qualitative methodology in his research to describe characteristics and generate theory about the factors influencing the sustainability of IT services organizations in Singapore based on the perceptions of managers. It has been used as a methodology verifying a priori of concepts housed within an interpretive paradigm – a philosophy that is concerned with the question of how individuals make sense of the world around them stance (Klein, 1999).

It started with a loosely predetermined conceptual frame which was developed through the literature and confirmed through the gathering and analysis of data. In such a context, Grounded theory is powerful as it gives room for the interpretation of '*real*' experiences of the participants and provides a systematic means to efficiently analyse large quantities of unstructured qualitative data (Locke, 2011).

5.8. Limitations of the research

The researcher opined that in this qualitative research, accuracy and consistency was difficult to maintain, determine, and establish (Kirk, 1986). The volume of data and the type of unstructured data that was collected in the form of perceptions of the interviewees especially made the analysis and interpretation time consuming (Berisha-Shaqiri, 2014). The researcher's presence during data gathering, which is often unavoidable in qualitative research, could have affected the participants' responses.

It was possible that the research model the researcher proposed was incomplete and/or imprecise. This issue was addressed by treating organisational sustainability as a conceptual construct instead of concrete concept.

The fact that the perceptions clustered thematically along theoretical components, helped support the theoretical concepts derived.

While it was entirely possible that organisational sustainability for IT services organisations and its constructs are not predictable, the researcher advanced a well-supported theory and asset of recommendations that are universally purported by several experts, which sought to explain different factors impacted the sustainability of IT services organisations. Consequently, a limitation of researcher's work having not yet being widely reviewed, challenged and/or confirmed by others, though the researcher felt results may encourage others to study organisation sustainability further.

The researcher highlighted the possible issues with the sampling in the methodology chapter. Purposive sampling had its inherent issues, but purposive sampling enabled researcher to squeeze a lot of information out of the data that was collected. This allowed researcher to describe the major impact his findings could potentially have on the population.

Not having an independent confirmation of the theoretical model was another limitation. The researcher attempted to mitigate this by discussing the recommendations with select interviewees and experts. However, fourteen interviews were not enough to confirm assessments across an entire organisation, or an industry comprising several organisations.

While there are several limitations, the researcher certainly felt that he was able to examine the issues in detail and in depth. The data that was obtained was relating to human experience and the researcher felt that it was lot more valuable for a concept that is just emerging and not a lot of literature is available.

With the limited data, the researcher certainly was able to generalize the findings and the same could be applicable for other settings and the same was explained earlier in this chapter on further areas of research.

In conclusion, most of the limitations to the researcher's work were previously anticipated and addressed in our methodology. It has been argued that while being valid limitations, none are substantial enough to diminish the contributions or significance of the researcher's work.

5.9. How are the research objectives met?

The objectives of research as purported by the researcher are provided below. This section also explains how each objective was met as a part of the research exercise,

- The first objective was: To analyse the literature to identify the contribution of IT services sector to Singapore economy, including contribution of government policies to IT services sector and available models to assess the impact of various factors on organisations. The researcher performed a concise research on the unique nuances of the IT services sector and its contributions to Singapore economy. The researcher also highlighted some of the specific initiatives from the government that would drive proliferation of IT services in the country. The researcher also looked at how the IT sector is different from others in Singapore and some associated factors.

- The second Objective was: To identify the key factors that may influence the sustainability of IT Services organizations in Singapore.

The literature review and the analysis of various theoretical models and frameworks helped the researcher distil a few key factors that influence the sustainability of IT services organizations in Singapore.

- The third objective was: To determine the factors that influence the perception of managers employed in the IT services organizations in Singapore. The researcher then conducted semi structured interviews and further embellished the factors that emanated out of the literature review. The semi structured interviews and the subsequent analysis helped the researcher consolidate the key factors that influence the IT services sector in Singapore.

- To make recommendations on the relevant factors that influence the perceptions of managers on the sustainability of IT services organizations in Singapore. The researcher then built a conceptual model based on the output derived from the analysis. The conceptual model provided clear recommendations to managers based on the research to help them improve the sustainability of IT services organisation. The conceptual model helped the researcher generalize the findings and build a theoretical framework from the same.

The progress made against the key objectives highlighted above is delineated in the table below.

Objective	How was this achieved?
To analyse the literature to identify the contribution of IT services sector to Singapore economy, including contribution of government policies to	The literature was analyzed, specific areas relevant to the aim were selected and specific models were also selected. The set of questions

Objective	How was this achieved?
IT services sector and available models to assess the impact of various factors on organisations	that were used for the semi structured interviews was derived out of the literature review. Figure 1 provided a clear context of the literature review. Table 10 provided the list of research questions
To identify the key factors that may influence the sustainability of IT Services firms in Singapore	This was achieved through the literature review and the same were corroborated by the semi structured interviews conducted by the researcher. Figure 1 highlighted the key factors that emerged out of the literature review. Figure 17 portrayed the final list of factors.
To determine the factors that influence the perception of managers on sustainability of IT services firms in Singapore	The comprehensive list of factors was provided in Table 17- conceptually clustered matrix.
To make recommendations on the relevant factors that influence the perceptions of managers on the sustainability of IT services firms in Singapore	The recommendations emerged out of the conceptual model- sustainability quadrant depicted in figure 7.

Table 21 - Research objectives and how they have been achieved

5.10. Conclusions

This chapter showed how the four research objectives have been realised and achieved by developing a theoretical model derived through a structured research process. These achievements were reflected through the contribution to academia and practice which emphasised the primary differentiators of this research.

The chapter also highlighted a possible way to build on the outputs of this research and future opportunities in this area.

It also highlighted methodological issues and implications of the research. The process was rewarding to the researcher because he derived valuable insights into both the personal thoughts of interviewees and of the workings of the organisations, they were part of.

Finally, as indicated by study participants, there is not one characteristic that ensures sustainability of Performance in today's turbulent business climate. Rather,

- It is in effectively managing the integration and interplay between the different characteristics and continually improving them to ensure an organisation's sustainability of performance.

- It is in recognizing the impact of different recommendations that have short term gains and incredible long-term gains and the corresponding ease of implementing these recommendations.

- It is in following a decision-making process that considers economic, environmental and social impact of all decisions.

As Andrew Grove (1997) (former Intel Chairman) pointed out, sooner or later something fundamental in every business will change and only the paranoid survive. People running a business should accept the fact that no amount of formal planning can anticipate such changes. Technological changes will hit every industry continually and for IT services, the disruption will be lot more pronounced and prominent. It is important for leaders to wear failure as a badge of honour, learn from the failures and not succumb to them (Komo, 2007).

Dell in partnership with the institute of the future predicts that 85% of the jobs in 2030 haven't been invented yet (Dell, 2017).

The rate and pace of change and uncertainty in IT services organisations will only increase over a period.

There is no silver bullet that ensures sustainability, this project will hopefully play a pivotal role in bringing the awareness among managers on the topic of sustainability and will add a few recommendations to their arsenal to improve the sustainability of their organisations.

"….The world is becoming less certain, so the role of organisational leaders is to foster their teams' capabilities and capacities to thrive in a world without clarity. The trick is embracing uncertainty not taming it…."- Jim Whitehurst (former CEO of Redhat, acquired by IBM).

Appendix 1- Abbreviations

Serial No	Abbreviation	Meaning
1	IT	Information Technology
2	ICT	Information Communication Technology
3	IS	Information Systems
4	TBL	Triple Bottom Line
5	SDG	Sustainable Development Goals
6	GDP	Gross Domestic Product
7	SGD	Singapore Dollars
8	D&M	DeLone & Mclean
9	(S)CA	(Strategic) Competitive Advantage
10	CAS	Complex Adaptive Systems
11	ITPM	Information Technology Portfolio Management
12	PPM	Project Portfolio Management
13	TCO	Total Cost of Ownership
14	RBV/T	Resource Based View/Theory
15	SaaS	Software as a Service

Serial No	Abbreviation	Meaning
16	CAQDAS	Computer Assisted Qualitative Data Analysis Software
17	CEO	Chief Executive Officer
18	VP	Vice President
19	FTE	Full Time Equivalent
20	PPP	People Planet and Profitability
21	COVID 19	Corona Virus Disease 19
22	STEM	Science and Technology, Engineering and Medicine.
23	AR	Accounts Receivables
24	SME	Small and Medium Enterprises
25	AI/ML	Artificial Intelligence/ machine Learning
26	SR	Sustainability Reporting
27	ENU	Edinburgh Napier University.

Appendix 2– References

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Appendix 3 – Interview approach and semi structured interview questionnaire

Each participant was made comfortable as soon as they arrived at the interview location. The following message was read to the participant.

"Dear Mr participant, my name is Srinivas Bhattiprolu and I am a DBA (Doctor of Business Administration) student from the School of Business at Edinburgh Napier University. As part of my doctoral course, I am undertaking a research project for my dissertation. The title of my project is A study to investigate perceptions of managers on key factors/ characteristics influencing sustainability of Information Technology services firms in Singapore. This study will investigate the perceptions of the managers who are employed in IT services firms in Singapore. The findings of the project will be useful / valuable because the study will elucidate on what factors are impacting sustainability. I am looking for volunteers to participate in the project. The person needs to be working for a listed IT services firm in Singapore and should be holding a manager position in the same. If you agree to participate in the study, you will be asked to participate in a one-hour interview. The researcher is not aware of any risks associated with the interview. The whole procedure should take 60 minutes. You will be free to withdraw from the study at any stage, you would not have to give a reason. This project will also mean that I will have to read your public profile in LinkedIn.

All data will be anonymised as much as possible, but you may be identifiable from recordings of your voice. Your name will be replaced with a participant number or a pseudonym, and it will not be possible for you to be identified in any reporting of the data gathered. All data collected will be kept in a secure

place (stored on a pc that is password protected) to which only Srinivas Bhattiprolu and his supervisor will have access. These will be kept till the end of the examination process, following which all data that could identify you will be destroyed. The results may be published in a journal or presented at a conference. Are you okay to go ahead with the interview?"

Explicit permission was sought from the participant to move forward with the interview and the consent form was signed by the participant. The interview process including the semi structured questionnaire process is explained followed by a brief explanation of the research project.

The following semi structured questionnaire is then administered. The questions weren't asked in any specific order. The researcher made sure that the questions in each category were completed before moving to another category.

Category	Research Questions
Strategic Intent	What is the strategic competitive advantage of the organisations? How strong and integrated is the Enterprise Risk management function of the organisation? What is the right mix of projects that an organisation should look for (strategic, transactional and transformational)*?

Category	Research Questions
Inherent Characteristics	What is the leadership style in the organisation**? What is the self-organisation capability that helps organisation deal with chaos? What is the level of innovation in the organisation? What is the level of productivity in the organisation? What should be the focus on resource skill development? What is the impact of culture on Organisation sustainability?
Customer Centric nature	What is the focus on service quality for the organisation? What is the ability of the organisation to retain customers who provide higher Customer Lifetime Value?
Financial parameters	What are the key financial parameters from the Organisation's current financial reports

Category	Research Questions
	that have an impact on the sustainability of the organisations?

*- The participant was provided the definitions of the three types of projects and any clarifications from the participant were addressed prior to asking this question

**- The participant was provided with the definitions of the leadership styles viz. authentic, ethical, transformational and autocratic leadership styles.

Appendix 4- Selected Interview transcripts

Transcript of Interviewee 2

Researcher: Thank you very much *** for your time. As I explained to you, I am pursuing my Doctor of Business Administration. My title is Study to Investigate Perceptions of Leaders on key factors and characteristics influencing the sustainability of Information Technology services firms. If you agree to be the subject for this interview, it will take 60 minutes. I will keep it to that. Full confidentiality will be maintained, you will not be directly quoted and only me and my supervisor will have access to this particular information and right after the project, this will all be, this information will be destroyed. Are you okay to proceed?

Interviewee 2: Yes

Researcher: Thank you very much, from your perspective, I will just give you a view of what sustainability means to me. It's called Triple Bottom Line (TBL) which is basically profitability, people and planet. These are the three perspectives that you look at. Profitability you know what it is, people is all about how to nurture people. The other aspect which Elkington talks about is the planet aspect. Now. you've been in this industry for so many years, and you have seen small, large, medium-sized organisations. As a CEO what are the key factors that you think are required for a firm to be sustainable in the Singapore market? Whatever you talk, should be from the context of the Singapore market, so that it will be useful for me. What's your view?

Interviewee 2: For a firm to be sustainable in this market. it's important that the firm looks at the customers in the region. Because Singapore in itself is a small market. So, the customer orders significant part of revenues should be coming

outside of Singapore. And within Singapore, the government linked companies (GLCs) public sector, and banking system will form a core opportunity for these companies. The offering should be distinguished and ahead of time in this market as the Singapore market will be looking forward to something which is futuristic. Something which is saving time, effort, labour and something which is innovative and people outside the region will look at Singapore use-cases and will be based on that it will be easier to sell other places with Singapore reference customers' existing.

Researcher: Okay. Very pertinent point I think you talked about being ahead of time. I would like to just dwell upon that a little bit. There`s something called Strategic Competitive Advantage. What do you think actually gives firms a strategic competitive advantage here, if you were to look at?

Interviewee 2: Yeah. So, I think that change is a constant process and it's a faster change taking place in the current time that we are seeing because of rapid advancements in technology which supports the quick change. Availability of cloud computing, and thus makes it much easier for people to get started with much lower capital. So, strategic competitive advantage will come from detecting the changes early and building your products around that early change. For example, people who will detect that voice will be the prime manner of computing instead of trying to improve their user interface and start spending a lot of energy on voice-based interfaces. People who realize that Natural Language Processing is improving at a very fast pace, well instead of asking the users to structure their queries, we will expect their queries to be asked in normal English, be it voice or be it text. So that effort shift will take place ahead of time. And that's what companies have to identify. Emerging signals much ahead of time and try and apply to their current situation before

anybody else does. It's very easy to get lulled into your day-to-day life. Significant investments should be in producing products for the future and not. If you are looking for operational efficiency only, then it is a row to death.

Researcher: Fantastic. It's a very important point. So, you are saying look for the future, look for rapid changes that are likely to happen because change is the only constant thing. Then, going on, since you are the CEO then obviously you will take, carry a portfolio of projects. You would have transformational projects; you will have transactional projects and you would also have strategic projects. What do you think is the right mix for a firm to sustain? As a CEO, what would you look at in your dashboard?

Interviewee 2: At least 15-20% of revenue should have, should be coming for products introduced in the past two years. And 70-75% can come from your traditional bread and butter offering. And significant about 10% or so of the spend should be on what Google calls as moonshots.

Researcher: moonshots?

Interviewee 2: Something which doesn't give you immediate benefits, but you hope that in the future it will give you a revenue. Or become your strategic competitive advantage.

Researcher: Fantastic. Fantastic. I think moonshot is a very big idea., I mean, every firm has enterprise risk management and obviously they are looking at everything that's happening. What role do you think enterprise risk management will play in the sustainability aspect of a firm? How would you look at enterprise risk management from the lens of sustainability?

Interviewee 2: Risk management from the end user company like a bank insurance or for a software company?

Researcher: For a software company. The risk management organisation for a software company. Everything that I am referring to is from a perspective of IT services organization.

Interviewee 2: What is important is that the company should be cash flow positive. See even if you are profitable but not cash flow positive, then you have a sustainability problem because you can sink under debt, cost of servicing debt. And that also means that the revenue that you are showing may not be the true revenue. Coz it may not be recoverable revenue. So, cash flow positive is extremely important. You have to watch your cost very sharply. So, in fact all you need to do I feel is, it's not necessary that you employ everybody. You can link to academia and can have interns working on it. Or you can crowdsource the work as well. So innovative ways of getting work done. So, you know, you may have some very good programmers available in Ukraine who may work freelance. Or you may have. I see a lot of Artificial Intelligence companies far more work to do and other students and get it done, some sort of trying to do themselves. And they have formed out the work. Linked to academia, it can help. So basically, you have to make sure you are cash positive and not burn too much cash. That is one aspect that is relevant. Second is to make it attractive for people to work with you because if you can't retain the people, we will have a tremendous loss of knowledge base that will take place. The current generation other than what they earn, it's very important for the generation to feel wanted, to have a clear vision visible as to where the journey is, where will we reach. So, if you can't share the future of the journey, the goal of the company, then the goal of the company, then it's likely that the employees will

be disengaged or may not be contributing to the cause as much as you will want them to be. So, it's extremely important that the vision is shared at the top where the company had really wanted to go. If you can't share the future of the journey. The goal of the company, then it's likely that other employees will be disengaged or may not be contributing to the cause as much as you will want them to be. So, it's extremely important that the vision is shared at the top where the company had really wanted to go.

Researcher: I think you've actually given me a very good segue way into the next part, which is the people. So, people, as you said, is one of the most important assets for software services optimization. So, can you dwell a little more on what as a CEO you would look at people. What are the aspects around culture that you would look at? What kind of culture you would want to breed in your organization?

Interviewee 2: So, I think culture is something which is difficult to measure. But I will, from my point of view, want to build a culture of hierarchy-less organization. Second is, people are respected for what they do and not for the titles. Fluid teams, teams that come in and disband. So, more project-based team rather than rigid hierarchy structures. Special recognition for any good effort put in. Lots of empowerment of people to do, like travel and they have to go for approvals and even low expenses and so on, so forth. And so, the culture of approval be minimal. I mean, you can't totally disband it, but culture of approval should be minimal. People should feel they are treated like adults and not like children. Should not ideally have strict in-time out-time. People should be feeling flexible to work from a coffee shop or from home or from office whatever. Whatever they are comfortable with, without bordering on indiscipline. If you have a customer which requires your staff to be there from

9 to 5, your staff works at DBS Bank then you can't let them enter and exit whenever they feel like. But if you don't have any such requirement then, it's good to give them flexibility and trust that they are working for the company and not to overlook their shoulders.

Researcher: Very pinpointed answers. Thank you very much. Let's talk about innovation. So, what role do you think innovation will play in the sustainability of an organisation?

Interviewee 2: So, innovation will be the single largest aspect, otherwise, you know, let's say. You have to see the change coming, ahead of time. When I say, what Nokia could not see, or Motorola could not see, and they lost huge markets in the process and in today's world the retailers are unable to see what is hitting them. So, you have to see the change and you have to move quickly enough to adapt to the change coming. And innovation is an extremely important aspect because if you see the complete market value, companies all the top five-six companies are innovative companies. You see Microsoft, you see Google, you see Amazon, you see Alibaba, these are all based on innovation. They are all based on outsmarting somebody else at a very rapid pace.

Researcher: So, innovation to you is outsmarting somebody at a very rapid pace, is that a fair definition? Very good. Outsmarting. okay. Fantastic. What do you think about the leadership style? Would you think I will play a role in the sustainability of organisations?

Interviewee 2: So, leadership style has to be somebody who is hands-on, somebody who understands the technology, somebody who can lead the team lives ahead of time. So, I would expect a leader to be reading two-three hours

a day. What's happening? What's about to happen in the world? And to prepare the organisation, to give direction to the organisation, aware where the organisation is headed.

For example, in our setup I pushed the chatbots in the company four years back. Now I am pushing voice bots very recently. Pushing Artificial Intelligence, AI-ML use cases into our organization in an aggressive manner. Focusing a lot on imaging-based data entry, so I see a part, I recognize the part number I don't need to mask. I see the part; I see the defect that is there in the part. I see suppliers' invoices, I know the supplier idea, don't need to ask these questions and so on. So, a lot of stuff on imaging technology is incoming. Now how you use it in a solution, you just need to guide the team towards where the future is headed, fairly rapidly. Embrace the changes. So, you need to know a lot. So that you are able to push the organisation and the change stuff that is coming. So, you have to be hands-on, you have to be tech savvy, be the change agent in the company, you have to set an example. So, if you want your company to save money but you want to travel business class, that's a bad example. If you, take a fat bonus yourself and ask staff to cut salary, that's a bad example. So, somebody who leads by example.

Researcher: Leads by example. Okay. Okay. One point, I'll be a little controversial here. There's something called Ethical Leadership. There's something called Maverick-based leadership. There's something called Hierarchical leadership. What do you think is right? Is it a mix of all these, or is it something which is very situational and circumstantial?

Interviewee 2: I guess, a mix of all. But I will subscribe to myself as a mix of Maverick and Ethical.

Researcher: Maverick and Ethical.

Interviewee 2: In my definition, Hierarchical has no place.

Researcher: Fair.

Interviewee 2: And that can happen to only leaders who are very confident of themselves, their own skills. People who are not so sure about their skills will only, always like hierarchy, process and so on so forth.

Researcher: Very pertinent point. And you believe that that is something which is going to be important for sustainability.

Interviewee 2: You see everybody who was successful has been a maverick, Elon Musk is a Maverick, Jeff Bezos is a Maverick.

Researcher Yeah, everybody. Those people have been successful.

Interviewee 2: The original founders of Google were Mavericks and some kind.

Researcher: Mavericks. Correct.

Interviewee 2: I think to grow rapidly Mavericks are required. But now, Sundar Pichai is not a Maverick. Now, the companies of that size, you need somebody who is a mix of all three. Maverick thing will sustain you for a while, but not forever.

Researcher: What is something that will be important in Singapore context? You have been in this market for a while. So, what actually works in Singapore, especially from an IT services perspective? Would a Maverick leadership work, would Ethical leadership work, or would transitional/transformational leadership work? What would work?

Interviewee 2: I would say a mix of Maverick and Transformational leadership. We will not say ethical, Ethical is given.

Researcher: Yeah, ethical is given.

Interviewee 2: Don't question that. Especially in Singapore context, Ethical is a more given. But now the companies are not for, nothing hanky-panky.

Researcher: Transparency. Yeah. Okay. Coming to the same saying on the people part, skill development and productivity. What are your views around the impact of these on sustainability?

Interviewee 2: So, skill development, you know I will encourage lot of the people to take online skill development. I don't think that era of the classroom is anymore to us. And pay for their self-education. Identify the areas where they need to work upon and gain the skills. What's the other question?

Researcher: Productivity. We will stay on skill development if it's okay. So, this is a very important point. So, you are saying gone are those days when organisations would actually invest on, would identify the training needs and would actually train people to meet the next generation requirement. You are saying the ownership is on people, especially the software field to actually identify their own.

Interviewee 2: The organisation will have to guide, that I want people to get skilled in, let's say, JavaScript or skilled in Apache, Kafka and all these software. Organisations should define the things they want people to learn and pay for it for people to learn through various online channels. I don't think companies should go for more and more classroom-based training. There are enough online training which are personalized nowadays. So, you have

something called as Emeritus in the US which is a very small organization. In India you have unacademy. So increasingly you are getting one on one coaching styles online as well.

Researcher: Correct.

Interviewee 2: So, mix of both. What I am saying is don't go for traditional.

Researcher: Traditional approach? What do you mean?

Interviewee 2: Traditional approach is the regular training and development approach we were used to in IT services organizations of the past. And some people will embrace. Some people who will not embrace the training, you will also know the people who, who are keen learners are who are not learners, and people who can't qualify, can't certify themselves. You will also know that their level of motivation. So, automatically, people weed themselves out. The way to do this is to find a better way of getting structured information in small chunks of time, as opposed to these massive training sessions

Researcher: People weed themselves out. Very much. Weed themselves out. Okay. Yeah. I think we talked about innovation, we talked about leadership style, culture. There's something called Thriving in Chaos. Basically, the software world you talked about change being rapid. I mean how to? how do organisations adapt and how relevant these things are for the Singapore market?

Interviewee 2: It is relevant for all markets. Because change, nobody is insulated from. So, thriving in chaos is the key thing. The Singapore market may have some disadvantages because everything is very orderly here. So, people are not used to. From childhood they have not seen what chaos means.

The traffic runs well, the electricity comes, the water comes, the, you don't think of somebody breaking into your house or stealing something from your car or some bank fraud taking place. We have got immune to certain things, which the rest of the world hasn't. So, Singapore in particular is not very tuned to chaos and that is something, that's the reason it's important that all Singaporeans spend a few years in countries like India or China to understand what it means to be in chaos. And whatever will do, will do good to them because you are living in a very protected place, it's like a tiger living in a zoo.

Researcher: Correct.

Interviewee: So, unless they are left in the wild they will not be able to hunt. So, I think it is important that people get exposed to it.

Researcher: A very candid feedback as usual. Yeah. Let's move on. You are the CEO of an organisation. If you are to actually evaluate other services from in Singapore and if you look at the financial parameters, what parameters would you really look at from your perspective to determine whether the organisation is going to sustain or not?

Interviewee 2: See, free cash flow will be the single most important. And then, second is how much revenue comes from the products introduced and offerings introduced in the past few months.

Researcher: Revenue from product. Okay. Okay.

Interviewee 2: Offerings introduced in the past few months. Third is the customer advocacy or the NPS score. Net Promoter score.

Researcher: Okay. I have a question on the free cash flow. Many of the innovators today, they don't really have free cash flow. They are not even cash

flow positive. They are under. Basically, they are innovating, yet to market respects them. So why do you think free cash flow? Is it a more services thing?

Interviewee 2: In that case, not relevant for them. So, people start-ups, innovators, people who, I am talking of companies who have had series C&D funding. See with that collapse of WeWork and a chance of driving the venture into trouble, I think they romance around a company posing negative returns for years together will vanish.

Researcher: Hmmm……will vanish.

Interviewee 2: So, I think the more amount of reckoning will come soon. See, we can no longer produce losses like Uber, so on and so forth.

Researcher: And continue to survive. So, it's a very interesting thing.

Interviewee 2: So, I don't think we should, if you had somebody funding and still not making cash, then there's something wrong.

Researcher: There's something wrong. Okay.

Interviewee 2: It is understandable. See, either you deliver revenue growth rapid or you deliver free cash flow. If you are going to grow at 8-15%, you deliver free cash flow. If you are going to provide 50-80%, then it's okay to be cash flow negative .

Researcher: Okay. So, either revenue growth. So, you can compromise revenue growth for cash flow, but it's not both. Both are being compromised then there's a problem. So, it's an impact on sustainability. Fair point. Thank you very much. The last point is on the customer centricity and you are eluded to this in the initial part. You talked about NPS as well. I mean services I, you talked about customer centricity being very relevant and how do you actually,

how do you really look at the impact of the customer centricity to sustainability of the organizations?

Interviewee 2: Yeah, so you know, if customers are not saying good things about you, you will not get business because not understanding what your salespeople do, or your sales pitch or whatever presentations you do doesn't matter a bit if somebody doesn't say positive things about you. And somebody saying positive things about you maybe 100% times more effective or get you the next order without anything else. So, I think the central purpose of somebody's existence is that somebody is getting value out of it. Even bigger things are willing to talk about it. That's the bigger thing. So, I think the Net Promoter Score will be important to keep companies real. Sometimes, in monopolies situations or sometimes, you have only three suppliers like say, if you are a telecom player you have only three suppliers. And then options are not many. You know the person will either go, the three are equally bad then, then customers have no choice but assuming a perfect competition where any number of companies can exist, customer centricity becomes important. You need to have a unique product which is a differentiated product. If you are a me-too product then only you can sell on price. Nothing else. If you have a differentiated product and, or you have a differentiated customer satisfaction, that will be, you have to have something different. If you have nothing different, the price is only differentiated. It is important that you think about the sustainability of the customer, as a customer is the reason for our existence if our customer is sustainable, the business will be, and it means you are adding value and your business will be sustainable as well. I believe progressive culture is a very important trait in Singapore

Researcher: Differentiated. Are organisations doing enough in Singapore to drive customer centricity? You feel the software firms are doing enough to actually drive this particular principal, you think that's the case or is it something else?

Interviewee 2: I can only talk of companies which are serving the region, within Singapore, I am not aware of too many companies. I think most of the companies are set up here by expats, or by Singaporeans or by scholars who are used to Singapore ecosystems. That's also and they are either mix of high intensity start-ups or moving into Artificial Intelligence and so on in a hyper growth phase the amount they are. And I would say they are attracting customers from all over the world, including customers from the US. The good thing about Singapore is the trust factor is very high. And these people don't fear about intellectual property in the country or sharing with you. Second thing is that a company from Singapore is normally functioning as a straightforward ethical company. If you are dealing with a company from Ukraine you have to hundred times think over.

Researcher: You have to worry about financial aspects.

Interviewee 2: If we give advance to the company, will it vanish?

Researcher: Correct.

Interviewee 2: Something will happen. So, in that sense I would say that, people are here, used to quality. So, let's say if you work in India, you yourself are not used to quality. It's okay to be late.

Researcher: Correct.

Interviewee 2: Here it is not okay to be late. Here it is not okay to be. Maybe Singapore is not as good as Japan in terms of expectation of quality, but it is pretty high up there. So, I think that way if you are from Singapore, there are certain expectations of a standard that comes naturally to the company, not just turning the company's names but you are in a Singaporean company, I expect this. Let's say the township is being built in Bombay by a Singaporean company. I would implicitly trust my money in buying a house there rather than trusting an India developer there directly. So that's a level of trust. And I think the companies here seem to be doing it, otherwise the country would not have the reputation.

Researcher: Correct. Correct.

Interviewee 2: Country reputation comes as an accumulation of all what the companies are doing. So, I guess is enough customer centricity that it is because I have not measured it, but I guess it does.

Researcher: Yeah. Okay. Good. And with regard to the educational system, the policies and the procedures, the government and the public policies, do you think they are friendly towards software services firms? Or do you think there are some changes that you would suggest as a CEO or as a leader of a software services firm?

Interviewee 2: So, I think it should be compulsory to do 10-20% recruitment by government-linked companies from start-ups. The country should be in, for ahead of ahead of everybody else and most of the social initiatives, I expected Singapore to be plastic-free three-four years back, so be fully electric vehicles, should have a higher speed internet that exists. And specific encouragement to, it's like the education system also needs to be ahead of time. So, if

Kubernetes is going to be big, then I will expect that curriculum in school, Kubernetes. Python is at school-level, something which you see happening in India and China.

Researcher: It's already happening in which countries?.

Interviewee 2: India and China.

Researcher: Ok.

Interviewee 2: Not here in Singapore. So, I think that is something the government needs to look for. There are enough mechanisms by which the government is encouraging investments, like encouraging some approved investors with half a million dollars, where the government gives half a million. We have received a few grants. So, that way I think the government is more business friendly than any other government that I have seen across. But I think, the rapid change and responding to the changing requirements will make it stand ahead of everything.

Researcher: Fantastic. I think you have also talked about the planet part, right? You talked about Singapore being plastic-free. So, that's my last point or last segment of this interview. We talked about people, we talked about profitability, and both are very important. But there's a third dimension, which is the planet part. And from a software perspective all of the leaders that I have spoken to, some of them have provided a good view, but some of them have said that's not something which is relevant for me from a software perspective. As a leader, as a CEO what is your view on the planet and what about it has on the sustainability of the firms?

Interviewee 2: Yeah, I think this threat is very real. So, global warming is a real threat. There is no point ignoring it and everybody has to contribute in a major manner. If it means automatically adjusting ten dollars to natural light, if it means automatically adjusting the air conditioning system using IoT all over to control stuff, the temperature is much cooler now. And all such initiatives and of course some more extreme measures like moving to electric vehicles or moving to compulsory occupation of cars for more than one person and so on so forth. So, those initiatives have to be driven to like plastic should be used at all. Single-use plastic should be totally banned, and everything should be a leadership position. Calorie should be mentioned in every food item that is there on every hawker and every stall and other place. A good restaurant should mention all ingredients. So, you have to. Like California normally needs a way that everything has in the world. I would expect Singapore to be ahead of California and sitting at global standards.

Researcher: Would you mandate this in the, you are the leader of a software firm. Would you mandate this?

Interviewee 2: In our company, we give free healthy food. All the nuts are free, all the fruits are free. We have a cross fit trainer, yoga, all sponsored by the company, paid for by the company. So, from whatever is to keep people healthy we do. We have IoT lights, and we have IoT doors on our floor. So, whatever we can do, we are doing. The national level is something that can be done. Singapore is a microcosm, and everybody looks at this country to follow. Especially in South-east Asia, it can be an example to others. First to do. First airport we have facial recognition-based end to end. Like I came from Hong Kong, I didn't see any human beings. I just continuously, smoothly I passed terminal four like that. But, everywhere we should be ahead in technology, you

know. Everything should be, leading edges now, is what I will recommend to the government.

Researcher: Okay. Thank you very much. I think you were very fast, very quick and then I think any points that you want to, any points that I didn't cover this is a semi-structured questionnaire based on my literature.

Interviewee 2: I think the key is to cut down the cost of operating from here. Cost of schooling is too high. Expats can't go to government schools anymore. So, what is happening is people are keeping very few people here and farming out work to India, China, Vietnam various places which I don't think is a great idea. And so, at least somebody with two children, you know currently I don't think they can survive for anything less than 150 thousand dollars.

Researcher: Correct.

Interviewee 2: If you are not in a government school, because private education is about two thousand dollars per month, and that's an unsustainable amount. And that makes it very unproductive for companies to employ people here. That is something I expect the government to take care of. Unless there's something else which I am not aware of that it wants to be the most expensive city in the world.

Researcher: Yeah.

Interviewee 2: I am not aware of the thinking behind it, but if that is the thinking then it possibly makes sense.

Researcher: No, that's not my area of focus as well. I think, I think. Thank you very much ***. Thank you very much for your time as usual, very candid responses.

Transcript of Interviewee 10

Researcher: Thank you very much *** for your time. I would like to thank you for agreeing to be a subject for interview. My name is Researcher and I am doing my Doctor of Business Administration from Edinburgh Napier University. The title of my research project is a study to investigate key factors and characteristics influencing the sustainability of information technology services firms and I would like to gather the perceptions of leaders and managers in Singapore. If you agree to participate in this study this interview will take 1 hour. You will be free to leave the interview at any point of time. All the data will be kept anonymous. You will not be directly referred to in any of the reports. Only me and my supervisor will have access to the raw data which is this interview questions and your direct voice. Are you okay to go ahead with this?

Interviewee 10: Yes.

Researcher: Thank you very much. I'll get the forms signed by you. This is a semi-structured interview. I have a few questions, but these questions are primarily to guide the discussion. Feel free to actually add any of your points and I am looking at your valuable experience to guide me and to provide me with the requisite inputs. To start with what does sustainability mean for you.

Interviewee 10: Sustainability means sustainability of the environment. Number 1. Sustainability of the enterprise and sustainability of any programs, initiatives that we initiate. Maybe those 3 things.

Researcher: So yes. Thank you. So, I think if you refer to the literature on sustainability, I think it's actually states sustainability as 3 P's: people, planet and profitability. This is what they call a triple bottom line feature. We believe it's the right way to approach sustainability. Basically, you are protecting

tomorrow at the same time you are actually surviving the present. It is exactly what they define as. Now coming to the information technology firms, and you have been contracted with several information technology firms in your past as an analyst. There are several factors which actually have an impact on the sustainability of information technology firms specifically in Singapore and that is where I am looking at your inputs whereas you would have contracted with several leaders. To start with when you look at information technology firms what are the key things that you look for from a sustainability perspective as an analyst?

Interviewee 10: When you say Singapore. Are we talking about Singapore firms or it doesn't matter?

Researcher: It doesn't really matter. Firms that are operating in Singapore and around the world. Sorry I should have clarified.

Interviewee 10: Yeah. No problem. So, can you repeat the question.

Researcher: What are the key factors you think you would look at when you actually look at a firm? What are your perceptions about sustainability? How do you determine whether a specific information technology services firm will sustain in the chaos of today or not? What would you really look at?

Interviewee 10: Yeah. So, the first one will be are they creating any intellectual property. Because through the differentiation we are able to stay relevant over a period of time. Two. Do they have sound operating principles or processes which enable them to deliver consistent levels of performance and value to their customers and they are able to keep doing that on a sustained period of time. And third, the big challenge, especially with small and local firms is are they well-funded enough. Are they funded enough to be able to, you know keep

going? Because many of the professional service firms especially that start off small, they are not well capitalised, and they usually run into cash flow issues as they look at scaling their business and growing the business. So, these are the things that have been predominantly you know looked at. It's hardly anybody has looked at sustainability of the environment as a prerequisite from an IT services firm in Singapore. It has never been considered or evaluated in any manner. At best we have looked for some professional certification that they are following certain certifications, ISO Standards or others or some of these certifications to justify that they are following some well-established global system.

Researcher: I think very pertinent point. So now I will look at one of the most important aspects that is how well are they catalysed. Now because you have touched that, let's look at the parameters. So, if you were given an annual report. Let's say it's a listed technology firm which is focussing on IT services what are the factors that you as a leader would look at to determine whether the firm is actually going to survive, sustain or not. Basically, looking at the past and predicting the future. Right. So, what would you do? What are the things that you would really look at?

Interviewee 10: Yeah. So, the first one is what percentage of their business is annuity. You know in the form of repeatable annual contracts. Second is how distributed is their client base. Is it leaning towards one or two large customers, is it fairly well distributed across a diverse range of industries? Third is are they able to charge beyond just the hourly rate but charge based on some intellectual property that they have you know that they have created. Right. So, can you repeat the question again?

Researcher: What are the key parameters that you would look at, if you were to look at let's say an annual report of an IT services firm?

Interviewee 10: For sustainability?

Researcher: Yeah. For sustainability.

Interviewee 10: Yeah. And what percentage of their team is working on or what percentage of the team or revenues are coming from some of the latest technology requirements in the industry. So, in today's term we would look at what percentage of the work is driven through the cloud or AI or you know some of these areas that is a good indicator that they are focussing on the right areas. are they moving and keeping pace? Because there are lots of service firms in Singapore who are still operating on servicing which are dying industries.

Researcher: Yeah. Okay. Thank you very much. I think that's a very important point. Now let's come to you talked about the currency of the technology and all that stuff. If you were to look at something called customer centricity or service quality consciousness, do you think it plays a role in sustainability? Quality consciousness.

Interviewee 10: It should play a role in sustainability. Quality consciousness, should it play a role in sustainability? Does it play a role?

Researcher: Does it play a role?

Interviewee 10: It should play a role and it does play a role. Yeah, it does play a role. How well people do it is a matter of interpretation.

Researcher: I think we talked about customer centric nature. Now lets the strategic intent of the organisations. What do you think will provide a strategic

competitive advantage for IT services firms if you were to look at IT services firms? What will be the strategic competitive advantage compared to others?

Interviewee 10: Strategic competitive advantage at scale is at scale is directly linked to pool of talent in today's world. In today's world. That means how good a talent pool I have. How good a talent pool I have as data scientists, cloud architects or security architects. That is what is the strategic competitive advantage in today's time. Simply because there is a huge shortage of competent professionals you know who are there specially in these skilled areas. So, in today's world that seems to be a huge competitive advantage.

Researcher: Fantastic. I think it's a very valid point. You are the only person who has actually talked about talent pool providing a strategic competitive advantage. Let's come to the portfolio of projects that IT services firms are doing. You could have a different portfolio of projects. You could have strategic, transactional and transformational. You think, I mean if you were to wear an innovator's hat or if you were to wear your own analysts hat, what would be your take on the possible mix of these three types of projects that would actually yield positive impact on sustainability? I'm putting you on a time leash here. But, please go ahead and share your perceptions.

Interviewee 10: Repeat the question.

Researcher: So, let's say you got the strategic, transactional and transformational projects. Right so these are the different types of projects a firm could have. Strategic is more towards having an impact at the strategic level to the customer or the organisation. Transactional are run of the mill projects. Transformational are long term focussed and they will be delivering a step change to the customer's business. Right, so this is the question.

Interviewee 10: What delivers most sustainability for IT services.

Researcher: What would be the mix? Do you think all three are important or do you think they should focus on one or what's your analyst view?

Interviewee 10: Transactional should account for. Let's do the strategic first. Strategic should be 10% to 15%. Transactional should be 60% and maybe 20-25% is transformational.

Researcher: Why would you say that? What's the rational?

Interviewee 10: Because transactional is repeatable, is consistent. Delivers consistent profitable margins and it is easy to keep working. If you look at the new sustainable firms, they keep complaining about the BPO firms, but you know they operate reasonably well.

There is no element of surprise. Their performance is fairly consistent, fairly predictable. They keep improving through different mechanisms and they deliver a degree of existing comfort. That predictability in operations, very seldomly you see them running out of cash etc… because they have built very good annuity revenue streams.

Researcher: Very good. So, your linking annuity to transactional services.

Interviewee 10: Yeah. That's how it is usually.

Researcher: Repeatable business. Yeah. Perfect. I think that's a very very valid point. Sorry you have anything more to talk. Yeah. So, one of the key things I have noticed from my literature review that plays a very important role in selection of these projects is the enterprise risk management function within the IT services part of the organisation. What control do you think an enterprise risk management function plays in the sustainability factor?

Interviewee 10: The enterprise risk management team of the IT services firm which is delivering services to the client.

Researcher: Correct.

Interviewee 10: What role do they play?

Researcher: What impact do they have? Not the role. What impact do they have according to you would they have? Because you have seen it from the other side. So, you have contracted with large firms, small firms. Large firms have a very tight enterprise risk management policy and principles and small firms don't have that. And each one of the approaches has its own pros and cons. So, what would you suggest?.

Interviewee 10: So, if you look at the world's best today. It would be Accentures, etc… If you look at them, they have very solid principles and therefore they tend to be delivering consistent, predictable though not extraordinary types you know business. Right. So, and there is a degree of trust that these companies enjoy simply because they have these policies. So, you can say that governments and others lean towards them more than let's say an IT services company because their enterprise risk management is not as stringent.

Researcher: Correct.. Yeah. I think we picked up a very good point. You said consistency without any extraordinary spikes and trust. These are the key factors and trust is reposed on them primarily because the organisations believe that they have a very tight enterprise risk management function. You think small firms miss that? In your view and your interaction.

Interviewee 10: Yes. All of them miss that. Small firms miss that. Because it is against their DNA.

Researcher: Okay. Very good. It is against their DNA.

Interviewee 10: Small firms are in a growth phase by very nature of how to operate.

Researcher: Let me challenge you, that saying that agility is directly proportional or indirectly, inversely proportional to the efficiency of enterprise risk management. Would you say that?

Interviewee 10: Yes. In this being Singapore context. Yes. Maybe not in Japanese context.

Researcher: Okay. Okay. Very important point…. Agility. Okay right.

Interviewee 10: I don't think they would have.

Researcher: They wouldn't have because their enterprise risk management. But then they are missing out on the excitement and the

Interviewee 10: But if the Singapore government was embarking on it they wouldn't take risk as a key aspect.

Researcher: They wouldn't. Very important. That gives me another question. What do you think are the different characteristics in Singapore, especially from an IT services perspective that you would actually tell me? Let's say talk about 3 or 4 characteristics from a Singapore perspective. Because you have seen India. You have seen every country. You have seen most of the countries in APJ. You have seen Western countries as well US, Europe. What are the striking things for you? What are the 4 striking things that are very relevant from

an IT services industry perspective that you would tell a researcher like me from a Singapore perspective?

Interviewee 10: I think Singapore is a challenge. The proximity to India puts tremendous pressure on pricing. So even though it is a developed market, it doesn't get the pricing that an Australian or a US firm gets. Relative to let's say GDP per capita. We should have been able to charge more for the equivalent set of services. But, the proximity to India lead the market too competitive so an IT services provider is not able to charge that price point.

Researcher: Okay. So okay very good point.

Interviewee 10: So, I think that's one trend.

Researcher: How about policies and government. You think Singapore government's policies around IT, are they good in terms of encouraging IT services firms you see there's any difference or a differentiator?

Interviewee 10: I think they haven't done either much to encourage foreign firms in any way. But they have done some. They have done just like they do for any other. There is no special initiatives. IT service firms are a key growth engine to the economy so let's give them slightly more emphasis as compared to bringing in a biotech firm. They haven't done more to encourage IT service firms as compared to other firms.

Researcher: Okay. How about let's say infrastructure, availability and the ease of doing business. You think it's any different in Singapore compared to the other markets?

Interviewee 10: For IT. That is equivalent for IT service firms as well as for a non-IT. So, there is no unique compelling environment created for IT service

firms here should be better.. For example, huge. There is a huge shortage of cloud computing expertise. We need 30-40-50 thousand cloud professionals and we all know it will have a great capability. A great opportunity that we can exploit it. Other than encouraging and putting more courses in Singapore and training more people what we have done the TCS's etc for generating cloud professionals.

Researcher: Like biotech. Where they are encouraging people to actually establish.

Interviewee 10: Because they think this commoditises it. They don't view this as highly a skill as biotechnology. It is viewed in part, but they view it as a can be grown.

Researcher: Differentiating factor

Interviewee 10: They see it as a need more than as an intellectual property. They see it as a requirement but not as an intellectual property and they see that it can be developed in house.

Researcher: You think the digital initiatives that the country is taking and the amount of spend that they are making from the initiatives like smart cities to actually the lifestyle, would it have an impact on the IT services?

Interviewee 10: Yeah. That is a huge plus. And that is having a good spill over effect in the sense that it is giving rise to growth of many smaller firms who in turn learn there and expand in the region. So that has always been there in fact for the last 20 years.

Researcher: So, you think that factor is certainly helping.

Interviewee 10: Singapore's bold position in IT services as well as the dominant position of leading global banks having their nerve centre in Singapore as well as Singapore being a hub to many unicorns is contributing immensely to the growth of the IT services system in this country. It is essential for IT services firms to have sound operating principles which will enable them to deliver consistent levels of performance and value to their customers and the key is to do this consistently for a sustained period

Researcher: Okay. Thank you very much. Some very important inputs. Let's go to the last section. Now I want to talk about some of the inherent characteristics that a firm would have. When we talked about, when I introduced the concept of sustainability, we talked about people, profitability and planet. We talked about profitability. We talked about planet. Now let's come to the inherent characteristic and one of them is certainly the people part. And you are the only person who said talent pool actually yields competitive advantage.

Interviewee 10: How people profitability and …

Researcher: Planet. These are the three parts that impact the sustainability. Factors that will have an impact on the sustainability.

Interviewee 10: Sure. Sure.

Researcher: What is your view of skilled development? You think that will have a role to play in improving the sustainability of the organisation positively or negatively. What's your view?

Interviewee 10: Extremely important. And most firms fail simply because they don't do it well. Institutions which build very robust environments for continuous

learning an investment in the skills are the ones who succeed. And it is not just you know people; lot of companies and it is not just like setting up internal academies for learning and development that alone brings the development of the skills and the talent to the firm. I think that approach people have seen doing it they tend to get told, their system has become old and the company ages and you don't be competitive. Skills development has a new definition in this era. That means skills development is skills development of my team, infusion of new team members with their new skills so companies do it by acquisition. So, if you say I will develop all the skills and I am training my guys they will all get great - Not enough. Am I acquiring teams with skills and off using, augmenting my existing skills with that?

Researcher: So, you are saying organic versus inorganic. And you are saying inorganic is extremely important.

Interviewee 10: Nobody does inorganic enough. So, they do organic, the best firms. But the world class firms do organic and inorganic you know to succeed.

Researcher: Can you share some of your experiences. How firms have been successful to inorganic skill development. Because you are the only person who talked about inorganic skills development. So, can you share some of your experiences and why you would say that?

Interviewee 10: You know the new age firms; they get this really well. Right so these new age firms what do they do they go and acquire a small company in India with data analytics or business / machine learning and through that process they build that capability. The old firms go and acquire these companies for client base. So very wrong method to do it. And as such they

don't mix them, or they acquire them and say let's keep them separate. So, they don't infuse and grow.

Researcher: Integrated

Interviewee 10: Integrated. Yeah.

Researcher: Okay very very important point.

Researcher: Any examples that you can share with firms that have…

Interviewee 10: I know Accenture and Deloitte and all these firms are doing a fair bit. If you notice they have gone and acquired last 5 years, last 7 years they have all become very big in digital marketing. This is a skill that they never enjoyed. They have brought them, they have integrated them and there is, you know it is not operating as a separate entity.

Researcher: I think you talked about separate versus integrated, organic versus inorganic then you talked about new technologies like digital technologies. Very pertinent points. Let's move further and talk about a bigger issue which is culture. What impact you think culture will have on sustainability?

Interviewee 10: Bad culture has very high impact on sustainability. Right.

Researcher: So, what is bad culture according to you?

Interviewee 10: Bad culture is degree of comfort. Right. And it happens in many service firms. So, people have been there for ages and they see that you know. But in-service firms you always have to deliver new things. Unless you are doing transactional. That's why you see transactional firms tend to be little bit more while they are below the radar they seem to be more sustainable you know. You don't hear much upheaval ups and downs, quarterly misses and

downs you know when you think about tele-performance. It's a great example of a transactional professional services BPO firm. One contact centre.

Researcher: Correct

Interviewee 10: You can see that everywhere, even though in a contact centre you know taking call, very old mature, they are still making improvements every quarter.

Researcher: Precisely so that's the point. Even transactional projects require innovation. They cannot make themselves immune from innovation.

Interviewee 10: Because of the long-term nature, incremental innovation is okay. Like Singapore is relevant. Singapore is not doing radical innovations right. Everything is incremental. As long as they are consistently doing incremental innovation they are extremely relevant.

Researcher: Next point is about innovation so talk is continuing

Researcher: What do you think innovation, what is the impact innovation has on sustainability. You think it's important or not? If it is, what elements you think of innovation are important?

Interviewee 10: For a services firm?

Researcher: Yeah

Interviewee 10: The biggest innovation and value is the business model itself. If there is any way I can deliver services and charge for intellectual property. If at all somebody can do it, then that gives incredible value. So that is intellectual property in terms of technology. In today's world intellectual property is in terms of trust is also becoming a cashable opportunity for IT services firms. So, I think

that is the innovation in terms of intellectual property, innovation in terms of governance and trust is you know is an important. What else...innovation in terms of deep understanding of the customer. Yeah so how you know in those days 10 years ago IBM was really known for their real financial services. You could not, not work with IBM. Right. So, I think that has moved away now. 7, 10 years ago Accenture was the go-to company for IT services and communications industry. That is no longer the case. Right so I think deep customer expertise on an industry is also an incredible opportunity to innovate and deliver value. I do think that is by far doing a better job in the communications industry than as compared to many others. Because they seem to be specialising in for example: They have developed an innovation of value creation for green field projects. They are globally known as the green field project telecom industry champions.

Researcher: So, you could basically establish a niche for yourself even in a specific industry and innovate? A very pertinent point. Now you talked about BPO's, you talked about consistency, you talked about transactional projects. One of the things that comes to mind when you talk about these things is productivity and your ability to keep producing with a consistent level of maturity and then also improve the productivity, improve the per capita production. And that would only be possible through improvement of productivity. What role you think productivity plays in sustainability of IT services firms?

Interviewee 10: Yeah. I think this is extremely important. You know. If you look at the most sustainable firms they focus heavily on let's say in regard it's not IT services, but you know Mckinsey can also be called IT services right?

Researcher: Correct. They can be. They can be.

Interviewee 10: If we really think about it, what makes them so sustainable. It's simply because they have a policy - up or out. Right. So that means if you don't improve your productivity and the onus of the, they have reached the nirvana stage where the onus of productivity is passed back to the employee itself. Right. The employee is not improving his productivity, he doesn't have a role in the firm. By nature, they are extremely productive in the sense you know it is built into the ethos, the culture and the growth of the company. And therefore, they are also the highest recruiters every year. So, you can see that their productivity is of super critical importance for the growth and sustainability of any services firm. Not just IT services firms. So, the best companies are usually even let's say you go to IIM. Top recruiter is Mckinsey. Doesn't mean that their business is doing that much but they are hiring so much because they have also pushed out so many. And they are keeping their costs low because they are constantly bringing in younger people at a lower cost structure.

Researcher: Talk about inorganic aspect there. There is growing capability but bringing in fresh blood and skill development. The other thing is about leadership style. Basically, you can look at an ethical leadership which is doing the right thing. Then a transformational leadership which is basically trying to you could have changed things. Then you could talk about inspirational leadership and you could talk about autocratic leadership. Different types of leadership styles. IT services what leadership style you think is relevant and important or is it a combination of styles?

Interviewee 10: What are the different styles of leadership?

Researcher: You could have an autocratic leadership. You could have an ethical leadership. You could have a transformational leadership which is

basically you are inspiring people. You can have an ethical which is basically doing the right thing. It doesn't matter what happens. You just have to do the right thing. Transformational is you basically taking risks. Autocratic is I am driving the way I want because I am an expert and I am driving it the way I want. Let's take these 3 as example leaderships.

Interviewee 10: So clearly obviously we need a mix of all the 3. But I would lean to having 40-45 % of ethical and then you know a little bit about autocratic and transformational.

Researcher: You believe that even an IT services firm autocracy has a space.

Interviewee 10: Well little bit of space to drive, to push the agenda. You know because if you have to it is, if you want to push boundaries of performance. Because IT services ultimately are billed by the hour and if you have to push the boundaries of performance you need certain you know certain level levers of autocracy to happen for those decision making, for those outcomes to be driven. So maybe Im not saying it is majority but clearly in today's era it seems like ethical leadership has a huge, in today's decade. For the next 10 years so if you can really portray yourself as being an ethical leader I think there is a huge opportunity which people are encashing on. And then there are other elements you know little bit of each, nobody is a 100% one way.

Researcher: But you believe that a mix of these leadership styles is what is going to actually …..

Interviewee 10: Everybody I think everybody has that right. Everybody's personality is not 100% one. It's more of this and less of this and less of this so ideally maybe 60% ethical, 30% autocratic and 10% transformational. You don't

need too much of transformational maybe I don't know. You don't need too much of transformational if you can deliver.

Researcher: In the IT services you believe that it's more ethical and probably a little of other, what do you say?

Interviewee 10: As of today, because it is about. What is today. It is about. What is all these projects, complex projects. Makes you want to right for the future right. You are taking very important decisions on governance, on data, on security you know so why is Accenture doing well in spite of fumbles and mistakes they have made is because there seems to be a thinking that ethically they have the right governance principles?

Researcher: Very pertinent point. Very different point from what I've been discussing. Okay I think it's very important. Okay. The last question I have is thriving in chaos. I think today's industry the way the rate at which the IT industry and more, so the IT services industry is changing is actually a lot more rapid compared to what it was doing let's say a decade ago or for that matter 5 years ago. And chaos is the new order of the day so you can't and that's become pretty much constant. Adjusting to chaos, thriving in chaos. Any thoughts on how it will have an impact on sustainability or from your experience and what are your views around that?

Interviewee 10: I think most people overestimate the chaos. And the firms that do consistently sustainable and stay sustainable over a long period of time are the firms that are fairly stable and slightly longer term in their thinking. It is not necessary that chaos means that there is rapid change. We have been talking about cloud since 2010. Less than 5% of all global workloads are on public cloud and 10 years have gone. And the total global cloud market is for

infrastructure is less than 50 billion. The total hardware spending is 1.5 trillion. Hence I think there is more chaos in our mind than there is actually in the ground.

Researcher: You say that the world is not changing as much as what we think it is. Oh, very important. Okay so why do you think that it is the case because everybody that I have spoken to has said there is rapid evolution, rapid change but you're the only person who has said look it's all in our mind. Tell me

Interviewee 10: No there is change in many aspects, but majority of the things have not changed. 95% of things have not changed. 5% of what we see outside has changed but 95% of the world has still not changed.

Researcher: Still the same…

Interviewee 10: Let's take cloud. IT is the fastest changing industry. Right.

Researcher: Correct

Interviewee 10: And if the total global infrastructure as a service. Now you can say public cloud private cloud. Private cloud is not a cloud yeah. It is a on premise. It doesn't have the full benefit of innovation, marketplace application, none of that is there. Correct. If you take public cloud market for infrastructure is 50 billion. Global IT spending on hardware and servers is over a trillion dollars. We are less than 5% penetration. Now if you ask anybody how much cloud in our conversation is, 95% is cloud. and I think the same applies everywhere. I think a good leader is able to talk the talk but yet understand the world is not moving fast enough and be mature enough to guide his organisation effectively through that change.

Researcher: You are saying chaos is more in somebody's mind?

Interviewee 10: In most people's mind.

Researcher: In most cases you think that it is chaotic

Interviewee 10: You have to sell the story. Yeah. You have to sell the story and the marketing guys get it. You sell the BMW 7 series but what sells is the 3 series. The largest volume of cars sold is 3 series right. But you sell the 7 so you got to sell the thought leadership. You got to sell the chaos but what is actually delivered is not there right.

Researcher: They talk big things but what eventually what sells is something that works. Nobody wants a swanky stuff…

Interviewee 10: Because I have a very favourite quote, our ability to think and visualise far exceeds our ability to execute. We can think a lot, but we hardly can do it.

Interviewee 10: Yeah. No. You make us feel good by giving so much respect

Researcher: Thank you very much ***

Interviewee 10: Not at all yeah