Alignment of Information Technology and Strategic Business Objectives

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Abstract— The misalignment of Information Technology (IT) and business results in IT not being able to support the business, and in the business not benefiting from IT offerings. IT is one of the important tools of enhancing the competitiveness of organisations. Business strategy relies on other functionalities, such as IT to be fulfilled. Organisations often introduce IT, but fail to align IT objectives with that of the business. To contribute towards realising alignment between IT and business, this paper investigates factors that influence the alignment of IT with strategic business objectives in the context of a South African parastatal.

Index Terms — Information Technology, Technology Factors, Organisation Factors, Business Strategic Objectives

I. INTRODUCTION

Many organisations depend on IT systems to carry out their processes and activities in serving customers and engaging with partners. In doing that, IT systems have to support the strategy of the organisation. Business strategies play a significant role within any organisation in that strategies serve to provide it with a competitive advantage [15], [16]. One of these competencies is IT systems. Although organisations may introduce IT, they may fail to align their IT objectives with organisation strategic objectives. As a result, several challenges arise that include but are not limited to failure of IT to support the business operations, lack of IT buy-in, inability to realise the need for IT and failure by the organisation to use IT sustainably and gain competitive advantage [1], [5], [8],[14],[17].

In South Africa, state-owned enterprises, also known as 'parastatals', are crucial for delivery of the state's strategic goals. The National Development Plan advocates that parastatals' policies align with the national vision to achieve economic prosperity. South African parastatals (e.g., the Electricity Supply Commission (Eskom), the Council for Scientific and Industrial Research (CSIR), the Telecommunications company Telkom, the National Research Foundation (NRF), and so on, are known to invest heavily in IT systems to help them deliver their national strategic mandates.

They thus require IT capabilities to function effectively. However, based on the identified challenges, there is a lack of clarity as to how IT and strategic business objectives could be aligned. Whilst literature highlights a number of factors to consider in order to align IT and strategic business objectives, it is still difficult to achieve successful alignment [10], [11], [13], [19], [20].

The world has become a fast and competitive environment - it's hard to survive and to sustain business [8]. Subsequently, failure of parastatals, such as the NRF, to align their business strategy with IT may result in projects that cannot be completed, lack of integrated systems, inefficient and insufficient systems and systems that do not enable the organisation to be competitive.

Given the discussion above about the alignment of IT and business, and given the evolution of technology, the present study was conducted with the aim of addressing this problem. The fact that this problem still exists today, attests to it being paramount for organisations to understand the factors influencing alignment of IT and business strategy in order to realise successful alignment and benefit from IT investment. An investigation into this kind of problem and a report on it has not previously been performed for the NRF. There has been a real need for such investigations to be performed for parastatals in South Africa, particularly for the NRF.

A. Research Questions
The primary research question for this research is:

What are the factors that influence the alignment of IT and strategic business objectives within the organisation?

- *What technology factors influence the alignment of IT with strategic business objectives of the NRF?*

- *What organisation factors influence the alignment of IT with strategic business objectives of the NRF?*

B. Research Objectives
- *. To investigate the perceived importance of technology factors in achieving the alignment of IT with strategic business objectives in the organisation.*

- *To investigate the perceived importance of organisation factors in achieving the alignment* of

IT with strategic business objectives in the organisation.

II. RELATED WORK

Business strategy and Information Technology (IT) strategy cannot alone achieve organisational goals and objectives. They must align for achieving organisational goals. Alignment refers to how IT is in harmony with the business, and how the business should be harmonised with IT. According to [12], through measuring information technology payoff, empirical research attests to this need for alignment. [12] further mentions that aligning business and IT strategies is the first step in the alignment phase.

[9] conducted a research study with the aim of determining the level of alignment in Australian organisations and to identify the factors that played a role in organisations realising alignment. Factors such as IT as an organisational tool, communication, organisational culture, organisational structure, and alignment facilitation process were discovered to be promoting alignment between business and IT strategy.

A study on "Alignment of business and information strategy in the financial services sector in South Africa", involved a survey focusing only on people, process and organisational factors [19]. The study looked at the organisational, people and process factors and determined which between the three factors was important in promoting alignment between business and IT strategies. The study also determined the success that had been achieved through these factors. The study revealed that the process factors was the most important and was implemented successfully in South African financial institutions.

[3] depicts processes as enabling organisations and improving efficiency in the organisation. [3] gives an example of the study of U.S. and European companies conducted by the Boston Consulting Group. The group discovered that over the past fifteen years, the extent of procedures and decision approval needs have increased from 50 % to 350%. They also found that managers spend 40 % of their time writing reports and 30 % to 60 % thereof in organising meetings. The question arises as to when people get to do their jobs. [3] furthermore mentions that processes offer a way to measure progress and productivity, and as a result increase efficiency and they should be standardised and simplified for the activities or tasks that keep the organisation.

In the empirical study titled "Business – IT alignment maturity of companies in China" [4], Eleven Chinese domestic companies and eleven multinational operating companies were compared. The study focused on human and organisational IS issues and investigated the relationships between alignment maturity constructs and IS strategic alignment. The findings of the study revealed that communication, competency, governance, partnership, and technology scope significantly influence a firm's strategic alignment instrument. The study also indicated that high level managers lacked awareness of IT, of technology competence of IS departments, and of the role of the IS department.

[18] conducted a study named "Factors influencing the implementation of server virtualization in the South African Department of Transport". Factors such as top management support, improved agility, customer service and higher application availability and reliability, improvement of security, culture of the organisation, compatibility and communication were identified. [18] further mentioned that compatibility, reliability and security go hand in hand. All these factors are important in any organisation. IT security is considered a major operational concern as organisations use the internet as the driver of e-business and for ease of collaboration. The demands of e-commerce require the internet to be safe and secured because it is easy to be targeted and attacked. The rising frequency of security incidents also means higher spending on IT security.

The adoption and reliability on the internet is growing. Electronic collaboration continues to speed up because organisations are now operating digitally. People rarely visit shops, with much of their shopping being done online. The growth of e-commerce continues to make information security more of an area of concern. As much as there are laws, such as the HIPAA 1996 and the Gramm-Leach-Bliley Act 1999 alluded to by [7], [2] that are meant to protect the security and confidentiality of non-financial data, individual medical records and the privacy on internet, security is still a worrying matter.

In trying to improve service delivery in South Africa, the national government conducted investigations looking at the deficiencies in service delivery of ICT. The investigations were also aimed at establishing if ICT in the public service indeed enables delivery of service [6]. [6] alludes to the South African Presidential Review Commission (PRC) report. This report stated that ICT decisions should arise from management of the state instead of technology specialists. The report emphasised that ICT management should be on the same level as management of other resources. It further encouraged a standard enabling framework of governance. The Auditor General's (AG) conducted a review of the governance of ICT and information systems in government in 2008/09 and again in 2009/10 and came up with the following recommendations [6]:

(i) Firstly: a government-wide governance of ICT. This involved that a framework to implement a national ICT strategy for addressing ICT risks based on defined processes and standards be established.

(ii) Secondly: the governance of ICT roles and responsibilities needs to be implemented to ensure sufficient Public Service ICT enablement.

In this review, the AG further found that the GITOs were not satisfying their strategic responsibilities due to insufficient accountability structures.

According to the [6] document, the AG in 2010/11 found that only 21% of departments had implemented adequate governance controls, but even those governance controls were not sustained because they had not been properly rolled out by management. Management has more power to influence the entire organisation to adopt the new technology innovation [21]

III. RESEARCH METHODOLOGY

The data for this research was collected using closed-ended questionnaires from a parastatal organisation, the NRF. Participants were presented with factors proposed by literature to influence alignment of IT with strategic business objectives and had to indicate how important they deem each factor in achieving alignment between IT and strategic business objectives. For each factor participants could choose between the following Likert-scale options: Very Important, Important, Moderately Important, Slightly Important and Not Important. The collected data was then coded and transcribed in the Statistical Package for the Social Sciences (SPSS) and analysed quantitatively. The frequencies of the demographics of the results of the participants were presented as well as a descriptive analysis. The perceived factors were ranked and weighed using Excel spreadsheet to determine the important factors to consider when aligning IT and strategic business objectives.

TABLE I
RANKING OF PERCEIVED IMPORTANCE OF FACTORS

Count (Very Important)	Count (Very Important + Important)	Weighted Score
Technology reliability (65.50), (64%)	Technology reliability (91.50), (89%)	Technology reliability (3.52)
Organisation top management responsibility (64.00), (62%)	Organisation top management responsibility (91.00), 88%	Organisation top management responsibility (3.48)
Organisation strategy (60.33), (59%)	Organisation strategy (89.67), (87%)	Human resource/empl oyee (3.39)
Technology compatibility (56), (54%)	Human resource/employe e (89.33), (87%)	Technology compatibility (3.34)
Human resource/employe e (54.33), (53%)	Technology compatibility (84), (82%)	Organisation strategy (3.29)
Technology security (50), (49%)	Organisation culture (82.00), 80%	Organisation culture 3.23
Organisation culture (48.33), (47%)	Technology security (75.5), (73%)	Technology security 3.17

V. RESULTS

Table 1 below depicts the ranking of perceived importance of factors, reflecting the perceptions of participants on the relative importance of the factors for the alignment of IT and strategic business objectives.

In the first column factors are ranked according to the number (count) of respondents that indicated that they perceive a factor as Very Important. In the second column factors are ranked according to the number (count) of respondents that indicated that they perceive a factor as Very Important or as Important. In the third column factors are ranked according to a weighted average of their responses. (with Very Important contributing 4, Important contributing 3, Moderately Important contributing 2, Slightly Important contributing 1 and Not Important contributing 0).

The Technology reliability factor ranked the highest of all the factors tested according to all three ranking strategies, with 64% of participants indicated that the factor is Very Important, 89% that the factor is Very Important or Important and having a weighted average score of 3.52. Organisation top management responsibility ranked second highest with 62% of participants indicating that the factor is Very Important, 88% that the factor is Very Important or Important and having a weighted average score of 3.48. All the constructs appear to have relatively high percentage values for Very Important and Important combined, as the lowest was Technology security with 73%, which is also a satisfying percentage value suggesting that it is significantly contributing to the alignment of IT and strategic business objectives. All the constructs tested was found to contribute significantly to the alignment of IT and strategic business objectives.

VI. CONCLUSION

IT remains a valuable tool in enhancing the competitiveness of the economy of a country. On the other hand, the world has become a competitive environment, and that does not exclude parastatals. Organisations are affected by the demanding needs of the environment and need to align their IT strategy with that of their business. Therefore, alignment of IT and business strategy is key for the advancement of the organisation and for achieving its strategic objectives.

Factors proposed by literature in categories technology factors and organisation factors were tested in the context of the organisation under study. All the factors were confirmed to be perceived to influence the alignment of IT with strategic business objectives and should be considered when planning for the alignment of IT and strategic business objectives.

This study contributes theoretically and practically to the literature of alignment of IT and strategic business objectives. The results of the study are expected to be used within organisations, more particularly in parastatals, when making decisions with regards to investment in technology. A possibility for further research would be to perform the same study in multiple parastatals.

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