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The development of a "holistic" model incorporating business strategy formulation with IdM strategy formulation

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ABSTRACT

Identity management (IdM) not only improves the process of creating and maintaining digital identities across the business systems, but, if implemented successfully it can contribute to the strengthening and positioning of the business for success. In order to lead successful IdM implementation organizations need to step back and determine a course of action that would solve enterprise-wide issues. Short-sighted actions can lead to confusion, unnecessary expenses and the delay of beneficial results. This paper presents guidelines for application of strategic management principles regarding IdM implementation. By gathering and interpreting information from a real life case study on how a typical large South African business organization approached its IdM implementation, a theoretical model incorporating IdM implementation planning within business strategy formulation is proposed. This study results reveals five important guideline steps regarding IdM implementation.

Keywords (Required)

Business Strategy, Identity Management, Strategic Management principles, Identity Management Guidelines.

INTRODUCTION

The emergence of web-based technologies and the increase in remote access through mobility enables enterprises to extend its perimeters beyond corporate firewalls. Opening access to enterprise network systems comes with the complexity of dealing with the growing number of user identities and managing their rights to specific company systems (Microsoft, 2002; Securitytech.com, 2004). Not managing these identities can easily lead to compromising the enterprise security or expose sensitive information. Identity Management is therefore pointed out as one of the key trends that impacted the Information Technology security market (BMI_T, 2008). A more strategic way to manage Identity Management (authentication, administration, and authorisation) and especially the implementation thereof is drastically needed. Unfortunately, managing multiple versions of users' identities across multiple legacy applications has been noted to be a daunting task (Buell and Sandhu, 2003).

Identity Management (IdM) has emerged as a critical foundation for realising governance, risk management and compliance (GRC). It has become a crucial issue not only for security purposes but also for sound business practice (BMI_T, 2008). Not only does IdM provide the ability to identify users, applications or devices across the organisation but delivered via a set of processes and tools to create, maintain and terminate digital identities. It automates processes and specifically addresses security processes associated with establishing adequate internal controls around financial reporting (Sun Microsystems, 2004). Vanamali (2004) therefore contend that IdM provide business value by providing auditing, compliance and monitoring. The tools permit selective assignment of roles and privileges, which facilitates compliance with regulatory controls and contributes to privacy-sensitive access controls (Hewlett-Packard, 2006). This indicates IdM as being broad in scope covering both technological (application) and non-technological (people and processes) aspects of the organisation. IdM is seen to be a strategic resource responsible for improvements of the organisation's internal process and value chain.

It is easy to understand why IdM implementations are complex (Charavanapavan, 2007). Adding to this dilemma, Spencer (2005) notes IdM systems to be large, complex, and expensive to build or buy, to implement, to maintain and to operate. Reality is that a full IdM deployment can take years to implement and can be very complicated as organisations integrate their disparate systems and reconcile users and access (Charavanapavan, 2007).

A strategy coupled to a tactical implementation approach is often the recommended approach towards IdM implementation. James (2004), argued that in today's competitive business environment it becomes crucial for enterprises to engage in strategic planning in preparation of IdM implementation. Authors such as Ahuja (2003), Vanamali (2004), and Dixon (2005) concur and emphasise that there is a need for a more strategic approach towards IdM implementation. These authors agree that IdM should not be treated as a turnkey solution, but it should be part of business strategy formulation. They see IdM to contribute to the realisation of a fast responding, flexible company which is therefore not a technological niche topic, but rather a strategic business topic. These authors conclude and argue that in IdM implementation there needs to be a combination of direction setting (setting a vision, mission and objectives), and strategic- and implementation planning for an organisation to perform effectively. To be able to cater for emerging IdM developments, trends and evolution, organisations need to develop and communicate its vision for IdM, be able to link IdM and business plans; and gain the support of the whole enterprise in this endeavour.

Problem statement

According to Vanamali (2004), in dealing with IdM in isolation to the business strategy will result in having fragmented point solutions, failure to deliver real business value, and failure to leverage existing investments and infrastructure. The effect thereof is dilution of identity management initiatives over time which makes it increasingly difficult to find funding for further initiatives.

Dixon (2005) refers to a company that launched competing IdM projects. These were two different projects with two different technologies and neither team within the company knew about the other. Dixon (2005) points out that this situation caused two factions of the same company to use IdM manoeuvres for political gain. The problem faced by organisations is that when IdM implementation planning is not incorporated within the business strategy, teams within the company do not strive towards reaching a common goal. Often there is a reinvention of the wheel, money spent on different technologies, all producing similar results. To address some of these issues, Vanamali (2004) provides an IdM framework that helps guide the establishment of a high level roadmap for IdM strategic initiatives to be implemented by enterprises. This framework not only provides guidance for the establishment of tactical processes, but also considers the impact of an IdM implementation on the organisations structures, policies, practices and technology platforms. Unfortunately, Vanamali's (2004) IdM framework, lack to provide a holistic view of IdM strategy as an integral part of a business strategy.

Apart from Vanamali's (2004), IdM Framework, literature for most part still neglect to supply a holistic model that incorporate IdM strategy formulation with business strategy formulation. This, we believe, lead to business decision makers still considering IdM separate to business strategy formulation. This inability to formulate a generic model depicting IdM as an integral part of business strategy can to a greater extent be attributed to:

    a.   A lack of knowledge with regard to the IdM concept, its trends and evolution;

    b.   The inability to recognise the strategic value of IdM; and

    c.   Not being able to understand the impact of the different models of business strategy formulation (strategic management) on IdM implementation.

There is thus a need to formulate a generic model that highlights the interdependency between IdM strategy formulation and strategic management (business strategy formulation).

Objectives

The aim of this article is to determine guidelines for the application of strategic management principles regarding IdM implementation. To help fulfil the aim the following aspect is covered: The development of "holistic" model incorporating business strategy formulation with IdM strategy formulation.

THE IMPACT ON IDM ON STRATEGY FORMULATION

Historically, one of the great challenges that corporate strategists face is to know the organisation's capabilities well enough to think deeply enough about its strategic direction (Mintzberg and Water, 1985). Organisations need to know what actions they need to take or can take to be able to establish an IdM strategy that will create competitive advantage. This, according to Kruger and Snyman (2002), is important if organisations want to define and understand its industry and operating environment identify its competitors, and determine their strength and weaknesses in order to anticipate moves.

One of the key issues that affect IdM implementation in businesses is the continuing tactical and technology focus. According to Macehiter, (2006), the strategic implementation of IdM is the difficult part because the history of IdM implementation has focused on discrete, technology-focused means rather than a holistic business-focused view.

The key to developing a model capable of synthesising strategic management and strategic IdM lies in synthesising the company's profile (internal environment) and its external environment. According to del Álamo (2007) IdM is the cornerstone to support new and profitable business models. This is because it provides the means to manage and selectively disclose user-related identity information within an institution or between several of them while preserving and enforcing privacy and security needs (del Álamo, 2007). IdM brings to the market an opportunity for service providers and third-parties within a circle of trust to share subscribers' identity information enabling quicker service for subscribers. This provides an indication that IdM implementation has strengths and opportunities that can lead an organisation to achieve a competitive advantage. The use of the SWOT (Strong points, Weak points, Opportunities and Threats) and competitive forces analysis (such as Porter's five forces model) can therefore be very effective in determining the impact of IdM on strategy formulation.

Analysis of competitive forces reveals that IdM support strategies of differentation, focus and cost. An example of where IdM led to differentiation can be found in large technology inclined companies. Through acquisitions of early entrants in the market these companies are capturing a controlling share of the IdM market. Business customers are becoming attached to the differentiation in products these companies are offering. In these large technological driven companies IdM is also differentiated to specifically targeted market segments, thus providing a more focussed strategy. The large pool of skills and long standing trust relationship that develop with customers are also lowering IdM technology prices. This decreases the threat of competition and even substitutes products. While there are strengths and opportunities to IdM implementation there are also threats regarding the choosing an IdM system that is subpar. These systems may easily put the firm's security at risk.

Before an IdM strategy is pursuit there needs to be an understanding of the business problems the business is trying to solve, and an understanding of organisational environment and processes. In all of this IdM should be regarded an integrated part of strategy formulation (Ahuja, 2003, Vanamali, 2004, Dixon, 2005 and Macehiter, 2006). With literature supplying insufficient guidelines and/or models on how specifically to achieve this, it was decided to test if companies intuitively follow a strategic approach regarding IdM implementation.

CASE STUDY: IDM IN A LARGE SOUTH AFRICAN TELECOMMUNICATIONS COMPANY

Being in the fortunate position of working for a culturally diversified multinational organisation based in South Africa, one of the authors was able to determine, on a first-hand basis, how IdM strategy formulation and implementation is done in a large South African telecommunications company (Company A). This presented the opportunity to gather and interpret information from a real life case study on how a typical large business organisation approached its IdM implementation. The following section provides a short historical background on Company A.

Company A is the largest communications services provider on the African continent based on operations revenue and assets. It is an incumbent telecommunications operator offering services and products to businesses, residential areas and payphone customers. The company's business consists of fixed-line and mobile communications services. In joint venture with Vodafone and VenFin, the mobile segment hosts the largest mobile telecommunications network operator in South Africa with a market share of approximately 56%. Company A is also well known for its fixed-line network operation and dominates with nearly 5 million connected fixed lines. This is accomplished in joint venture with MultiLinks and Africa Online, making Company A one of the largest telecommunications network operators in Africa. Company A endeavours to become world-class, their vision is to be a leading customer and employee-centred ICT solutions service provider. Being fully fledged "African", company A support a Synergistic Inspirational management style (a combination of Eurocentric and Afrocentric management styles).

Company A's business strategy is to defend and grow profitable revenues. One of the themes the company uses to accomplish this is through geographic expansion into fast growing markets. The geographic reach initiative sees both internal and external users continue to require increased access to the company's information resources. There is thus a need to manage all of these users' access in the company's network and reduce any security risks. IdM implementation supports the growth strategy of the company. Company A also has to comply with the regulations of the Sarbanes-Oxley (SOX) act in terms of appropriate access to corporate information.

Research Methodology

Business managers and IT managers of Company A where interviewed (10 in total). These managers (all "senior" with regard to organizational standing) all operate in the central offices (North Eastern Region) and where involved in the company's

IdM strategy formulation and implementation program. Avoiding getting one answer without much thought to it, face-to-face interviews were conducted during 30 minutes allocated time per participant in which an assistant was present to administer. The primary data was collected using semi-structured questionnaires. Part A of the questionnaire focused on collecting details of the respondents and provided definitions of IdM for clarity of the concept. Part B consisted of ten descriptive questions which dealt with the following five categories: 1) IdM as part of the business strategy, 2) Identity challenges in the company, 3) IdM implementation approach used by the company, 4) IdM framework followed and, 5) the IdM strategy implementation plan of the company.

RESULTS

The results of the primary data collected are presented below using the five main aspects that was used to structure the topic of discussion in the questionnaire.

IdM as part of the business strategy

The response to the first question of whether the respondents would describe IdM as part of the company's business strategy was strongly acknowledged by 80% of the respondents. Two of the respondents (20%) saw IdM as only a security measure and nothing more; they did not see any form of link between IdM and the business strategy. Aside from the two respondents, the rest of the interviewees responded positively (80% agreeing) to the question whether the company considers IdM as a critical element supplying competitive advantage. These respondents also acknowledged that IdM is regarded as a risk management strategic plan being approved at board level, and indicated that IdM forms a key element to the fulfilment of the company's strategic vision and mission statement. Of interest is that no responded mentioned that there is a documented process that incorporate IdM strategy as part of the Company A's business strategy.

Identity challenges in the company

Respondents' feedback in response to identity challenges faced centred around the following: 100% responses agreed that multiple user identities needed to be managed; 80% agreed there to be poor operational efficiency to administer user access to multiple systems such as the network, e-mail, intranet, enterprise resource planning, mainframe and more; 95% agreed on inefficient user provisioning processes; 75% agreed there to be lack of user validation; and 90% respondents agreed that high password resets logs needed to be administered. Overall, there was 100% responses' agreeing that an enterprise-wide solution to authenticate network access and manage access was a necessity. According to these respondents Company A wanted to strengthen its network access control by providing strong authentication and management of user network access and be able to easily audit and prove compliance. It became apparent and 100% of respondents agree that Company A required a solution for strong user authentication that focuses on digital IdM spanning legacy systems and emerging authentication and authorisation technologies. These requirements lead Company A to the creation of a single identity management system that will be authoritative for all its users (internal and external). Every system that allows access to network based users must authenticate against the IdM system.

IdM implementation approach and strategic framework used

In trying to gain an understanding on what approach was employed within the company for its IdM implementation and what framework if any was used as a basis towards the deployment of IdM, the following was found: In contrast to the 80% of respondents that indicated that they consider IdM to be part of a company's business strategy, only 60% of the responses agreed that Company A's approach towards IdM implementation was that of a strategic thinking process accompanied by an incremental tactical implementation. Only, one respondent (10%) felt that the company used a purely strategic "big bang" approach with full implementation, while 30% thought the approach used was tactical – short term technology-focused. This strongly hints at some managers continuing to fail to see that strategic link between IdM and "Strategy" (business strategy formulation).

A common strategy was observed from the response of respondents (60%) who agreed that Company A's approach towards IdM implementation was that of a strategic thinking process. However, all these respondents commented that an external environment analysis was not done. These respondents also agreed that IdM, as a competitive tool, was not analysed. More in-depth questioning revealed that the "common strategy" referred to by respondents, was in fact a "strategic framework" used by the company as basis to its implementations planning process. Unpacked during the planning stage this "strategy"

contained elements such as the assumptions, roadmap, tactical process and benefits for the IdM system deployment and future enhancements foreseen.

Discussion of Findings:

We can see that Company A's IdM implementation approach entailed an understanding of the organisation internal analysis (what the organisation currently had and what necessary enhancements the organisation needed to make to ensure achieving of its IdM objectives). It can also be concluded that a gap analysis was undertaken to look at the company's current process and were gap exists, understanding the impact of IdM on the business. This included understanding of the business goals or requirements that drive the need for IdM solution and identifying the architecture for the enterprise IdM solution. According to 80% of respondents there is, however, difficulty in funding further initiatives or IdM enhancements. There are mentions of lack of executive support. This can be attributed to the limitation of not having a synthesised "Strategy" that also deal with external factors (Opportunities and Threats) and how IdM impact on the formulation of generic strategies (Cost, Focus and Differentiation). In essence, no mention was made of a process followed of ensuring any new IdM initiative aligns to the enterprise requirements. This place a question mark on why would the executive continue to support further IdM initiatives without there being a cohesive understanding and outlook of IdM's support to the overall enterprise business strategy. We find that Company A still needs a clear "Strategy" that would govern this exercise and can be accessed by all in the enterprise.

Even though it was found that respondents see the "strategic framework" as a strategy that can align IdM implementation to key business drivers, it is in truth a tactical plan. Similar to the framework proposed by Vanamali (2004) it still only provide a tactical implementation planning guide. Arguably, this would account for the 20% of respondents still failing to see that business strategy need to be coupled to all IdM implementation planning.

A generic model incorporating business strategy formulation (strategic management) with IdM strategy formulation

Similar to authors such as Ahuja (2003), Vanamali (2004), Dixon (2005) and Macehiter (2006), we belief that IdM should be regarded an integrated part of strategy formulation. The formulation of a core business strategy and supportive strategies (of which IdM is one) should therefore not be seen as separate entities. For IdM to be escalated to a strategic level, it should be superimposed within the strategic planning process.

In fulfilling the purpose of developing a generic strategy formulation model capable of providing a bird's eye view of IdM as an integral part of a business strategy, the proposed model is split in the following two sections:
- Setting of strategic mission and objectives;
- Establishing strategic initiatives.

The last section incorporates the first two and concludes with a strategic formulation model for IdM implementation.

Setting of strategic mission and objectives

The proposed model is an iterative strategic management process for IdM implementation (Figure 1). The model guides strategists to first have an understanding of what their organisations mission or vision and future objectives are. This is followed by an assessment of the internal organisation profile (strengths and weaknesses). Cognisance of the inventory of existing organisations products, resources, business processes, capabilities and organisation's plans for IdM if any are taken. The model also guides the assessment of the organisation external environment through analysing the external opportunities, threats, and competitive analysis. This enables organisations to know how they can position themselves in a competitive marketplace. With this knowledge, organisations can select the core business strategies (differentiation, focus, cost) it wishes to adopt. The IdM strategy is therefore in support of the core business strategy. As the IdM strategy supports all generic business strategies, it should be seen as an enabler of any or all of these strategies.

In essence, when IdM is part of a strategy hierarchy, it should bring operational level activities in line with the overall business strategy. In crafting any business strategy, the initial step of the strategic planning process is to provide for setting a clear vision, mission and objectives prior to crafting any IdM strategic plan. The formulation of a Vision/Mission statement should be an organisational wide (interactive) process. All stakeholders involved should reach agreement that these goals are obtainable. During these formulation stages, social responsibility should be a critical consideration for strategic decision-makers, Thus vision/mission statements and the future goals must express how the company intents to contribute to the

societies that sustain it. Once the organisation's future vision/mission is specified and written, the business implications of how the organisation wants to operate in the future should be clear. The vision/mission statements governing the use of primary resources (of which IdM is one) may then be written (Kruger and Snyman 2002).

For a moment, let us once focus on IdM as one of the primary resources. The future IdM vision/mission statement should set forth the fundamental rationale for the future activities of the IdM department. This means that the IdM department should be mandated to act as an enabler in ensuring the availability of appropriate information to support the strategic decisions in the organisation. This mandate should thus include the responsibility to improve the "As is" IdM architecture, to the "Should be" architecture, and also to develop the "Future" IdM architecture needed to support the core business processes of the future. All these statements and architectural artefacts should form the basis for developing an organisational wide IdM Policy and an IdM Strategy based on the following principles: accessibility, quality, user accountability, openness/free flow of information, security and confidentiality, privacy, cost and value, ownership/intellectual property, misuse of information, etc.

According to Pearce and Robinson (2005) and Thompson, Strickland and Gamble (2005), organisations before any pursuit of IdM strategy, need to understand which business problems it is trying to solve, and understand the organisational environment and processes. The creation of a vision, mission statement and identifying business objectives naturally gives rise to the need for organisations to understand the organisation's internal and external environment. As previously indicated, the SWOT analysis and Porter's five forces model are important in this instance as they provide organisations with aspiring IdM initiatives an understanding of what they need to take note of to be properly positioned for the future. In the application of strategic management principles regarding IdM implementation, after setting of IdM mission, and vision statements and policy, internal and external organisation assessments must therefore take first priority. Such an assessment will enable to determine how the competitive environment of the organisation could change in future and how the organisation should take advantage of these changes. This assessment step takes note of the involvement of the organisation's resources and the business processes and capabilities, especially IdM processes and capabilities, to achieve the business and IdM mission and objectives.

Simultaneous assessment of the external environment (now and in the future) and the organisation's profile ("As Is", "Should Be" and "Future"), will enable the identification of a range of possible attractive interactive opportunities regarding IdM. These opportunities are possible avenues for future investment. However, they must be screened through the criterion of the organisation's current and future mission/vision, non-negotiable policies (thus also policies contained in the IdM Policy), organisational ethics, norms and values, to generate a set of possible and desirable opportunities. This screening process should result in the selection of options from which future strategic IdM choices should be made. This process is meant to provide the combination of long-term objectives and generic and grand strategies that optimally position the firm in its external environment to achieve the company's future vision/mission and goals. This, to a great extent, determines and/or influences the generic strategies (cost, differentiation, and focus) and supporting strategies (innovation, growth, alliance) the organisation will choose to adopt.

A holistic strategic formulation model

Upon having the initial business requirements the proposed model guides the establishment of a high level strategic business plan to create a logical plan for actual implementation of strategy, and thus also IdM.

The IdM Planning Process should therefore generate a Strategic IdM Plan (SIdMP) to govern the efficient and effective management and future institutionalisation of IdM systems. The SIdMP should in a sense be a statement of the major initiatives, not yet defined precisely enough to be projects that the IdM department and user-managers must accomplish over some time period to move the organisation towards the IdM vision and strategic plan, as derived from the core business plans. The SIdMP should outline the results desired for a specific time, as well as the major initiatives necessary. After the SIdMP has been developed, the initiatives identified in it must be translated into a set of more defined projects with precise expected results, due dates, priorities and responsibilities.

It must be stressed that the IdMSP is part of the business strategic plan. The model proposed in figure 1 therefore superimposes the IdM tactical framework within the strategic planning phase. This enables considerations of all tactical aspects also to be considered. Dixon (2005) indicates failure to incorporate these factors within IdM initiatives to result in failed IdM implementation. The last step of the model provides for ongoing performance evaluation, monitoring and control of the implemented IdM initiatives as necessity. This takes into account; changing conditions, new opportunities and new

ideas that could surface. All new IdM requirements emerging after implementation necessitate that strategists need to repeat the business requirement analysis, planning, and implementation process. The proposed model therefore provides a bird's eye view of IdM from a business focussed driven view.

As per any business strategic plan, the IdM strategic plan would have to be approved, guided and monitored by the organisational executive committee and business decision makers, and communicated to all stakeholders involved. This ensures all identified initiatives to be implemented throughout the organisation so it can strive towards a common goal. This will eliminate teams to initiate IdM initiatives not approved at top level.
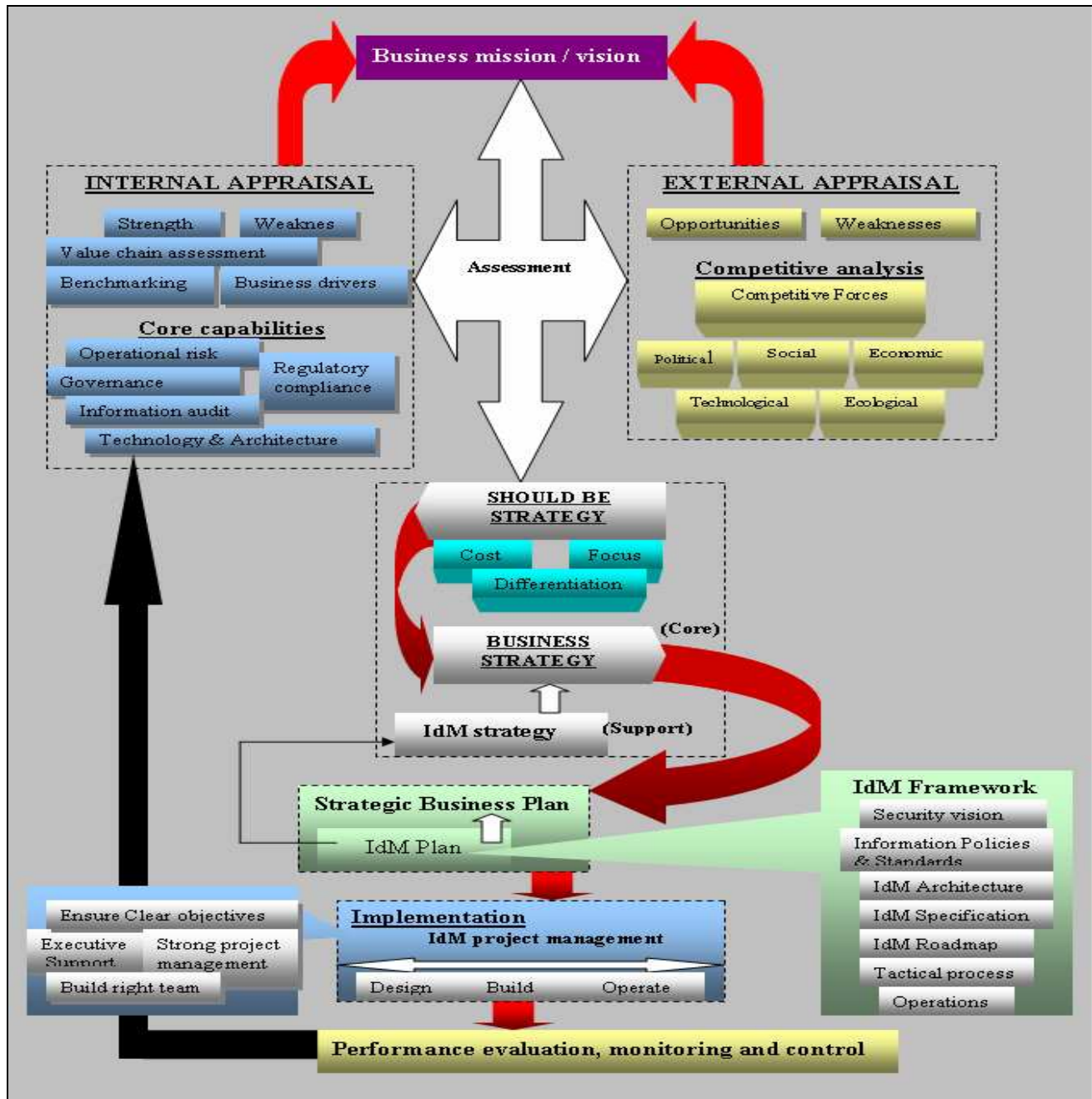

Figure 1: The holistic strategic formulation model incorporating IdM implementation planning within business strategy formulation process

Conclusion and Recommendations

The role IdM plays in business has evolved to become more strategic, and not only a critical issue for security but for sound business practice. Best practice on IdM is an expectation that is enforced by increasingly strong legal and regulatory requirements, where penalties for non-compliance can be severe for the business. Successful implementation of IdM can therefore be critical foundation to realising governance, risk management and compliance within the business. Because IdM implementations are very complex requiring organisations to integrate their disparate systems and reconcile users and access, it is found that the best practice is to engage in strategic planning process in preparation for IdM implementation. As IdM is of strategic significance, supporting all generic business strategies, the application of strategic planning process enables IdM to be viewed from a business-driven point, an integral part of the business strategy. Dealing with IdM implementation in isolation to the business strategy results in having fragmented point solutions, failure to deliver real business value, failure to leverage existing investments and infrastructure, dilution of IdM initiatives over time, and difficulty to fund further initiatives.

The model proposed in this article uses a strategic planning process to model the interdependence between IdM implementation planning and strategic management (business strategy formulation). The strategic planning process for IdM implementation begins with a business vision, proceeds through a gap analysis or environment assessment, produces a business strategy of which IdM is part, sets business plans outlining the IdM technical and functional requirements specification within these plans, produces IdM strategic initiatives roadmap, through deployment team executes identified strategic initiatives, and proceeds through ongoing evaluation, management and control of implemented strategic initiatives. This enables organisations to develop and communicate its vision for IdM, be able to link IdM and business plans; and gain the support of the whole enterprise in this endeavour. By leveraging the proposed model, organisations can have a bird's eye view of IdM as an integral art of the business strategy, and ensure IdM implementation that has enterprise-wide benefits.

From the research one can conclude the article by documenting the following five guideline steps providing guidance to the application of strategic management principles regarding IdM implementations, which are for careful consideration by organisations:

Step 1: Have a thorough understanding of the organisation's profile, the industry it operates in and enterprise requirements.

Step 2: Identify the "should be" strategy (business strategy) that IdM will support (e.g. Differentiation, Focus, and Cost strategy).

Step 3: Create an strategic business plan incorporating the IdM strategic plan making use of strategic framework to identify strategic initiatives.

Step 4: Develop an implementation plan to execute the identified IdM strategic initiatives.

Step 5: Have ongoing performance monitoring and control assessments. If new requirements after implementation emerge, the process from step 1 is to be repeated. The process is repeated from requirement analysis, strategy crafting, planning, implementation and performance evaluation.

Limitations and applicability of the study

A limitation of the study was the focus on a "single" case study in a "single" developing country's industrial base, South African. Given the time and logistical limitations of this study, plus a focus on providing insights rather than generating quantitative results, it was impractical and unnecessary to include all organizations within South African industry. The baseline data presented must therefore be viewed as a "pilot study" to inform other empirical studies that investigate the perceived 'enablement' afforded by IdM in business strategy, especially as it relates to developing economies. An extensive survey, and/or more in-depth case studies (e.g., 10-20 cases) are thus still needed to validate whether the suggested approach enhances the actual value of business organizations or perceived benefits.

Due to the subjects of research being drawn in as integral parts of the research design, manipulation due to "overly emotional or subjective involvement" could have occurred due to respondents serving their own, rather than the research needs. Agreement on how specifically to manage identities may never materialize, but a long term strategic plan to solve the successful implementation of IdM might prove to be quite valuable in the continued quest to manage identities successfully.

The line of reasoning followed throughout the article is that no single approach or model could cover all essential aspects involved in the IdM arena and strategic management. The model proposed is by no means a conclusive model, proposed with the intention to speculate that in all cases it will be the most applicable tool to use when formulating a business strategy. The model is simply a tool in the quest to illustrate the interdependency of strategic management and strategic IdM, where IdM is of strategic importance. It provides the ability to see IdM as an integral part of business strategy.

The management of IdM, in all its complexity, constitutes much more than the issues identified in this research. As the body of knowledge evolves, the line of reasoning and the holistic model proposed must be updated and revised on a regular basis. This study may therefore be viewed as a "pilot study" to provide insights. To take into account the time it takes for an large IdM implementation to impact on business, more research is needed before the interdependency between IdM and Strategy can be calculated more accurately. Such a longitudinal study should span a number of years and be inclusive of additional industries, within different managerial and strategic settings.

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