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Balanced investment decisions

Multi-Dimensional Performance Frameworks and Strategic Investment Decisions

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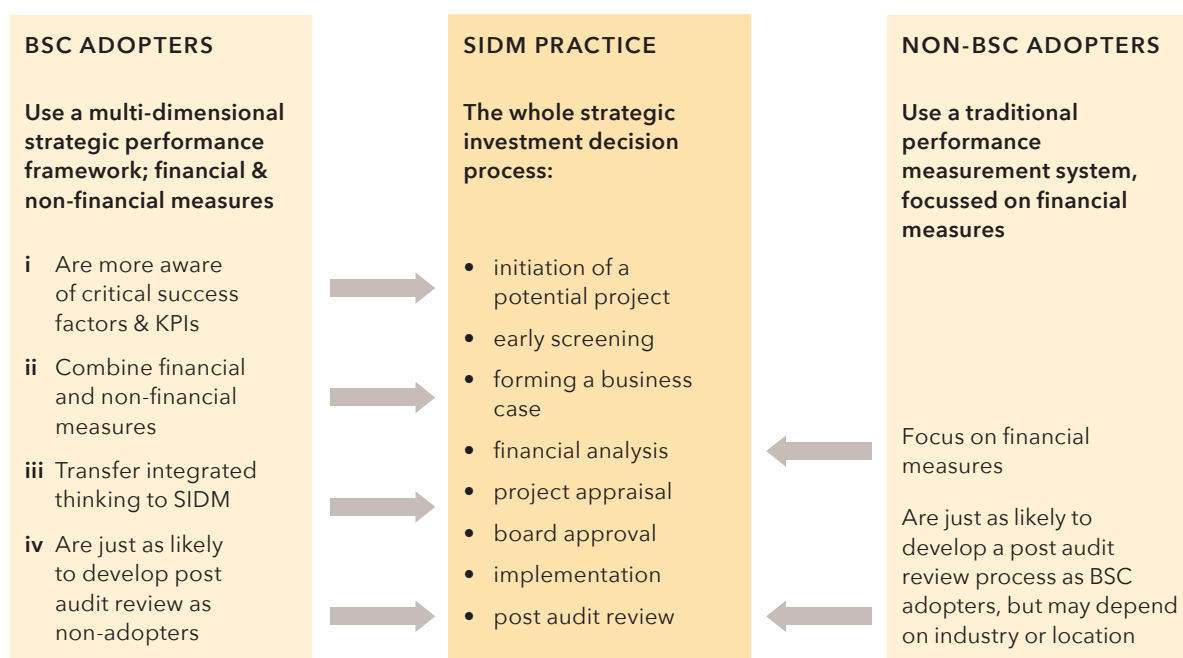
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1. Introduction and summary

In recent years, much attention has been paid by both academics and practitioners to innovations in organisational performance management systems that balance financial and non-financial dimensions. The most influential has been Kaplan and Norton's (1992; 1996) Balanced Scorecard (BSC), though section 2.1 below recognises others. Recent research shows that various forms of BSC have been widely embraced in practice and that managers' thinking about performance management is changing as a result. Theoretically, these multi-dimensional performance measurement systems (PMS) are linked to organisational strategy and should support decision-making. It would seem, therefore, that developments in PMS thinking ought to impact on strategic investment decision-making (SIDM), where the aim is to evaluate how future investment projects will affect organisational performance and the achievement of strategic goals.

We define SIDM as the whole strategic decision-making process, from initiation of a potential project through formulation of a business case, financial and non-financial analysis, to board approval, project implementation and review. However, there is little evidence that much has changed in practice since King (1975) argued that there was a misplaced emphasis on the financial analysis stage. Standard formats for investment proposals often still comprise a discounted cash flow analysis (financial appraisal) and a narrative (capturing non-financial considerations) as two separate elements in a business case document. Decision criteria are rarely specified beyond a target net present value or internal rate of return hurdle rate. But, if multi-dimensional thinking is emerging in PMS practice, would we not expect commensurate developments in SIDM, which is so crucial to the achievement of strategic goals? Figure 1 shows the key findings from our study.

FIGURE 1 - STRATEGIC INVESTMENT DECISION-MAKING (SIDM) IN BSC ADOPTERS AND NON-ADOPTERS



This report addresses the question: 'have advances in PMS, such as the Balanced Scorecard, impacted on or been mirrored by advances in the practice of SIDM and if so, how?'

We analysed evidence collected from six case organisations. Our findings from this study show that managers in the organisations that had adopted BSC-type performance management approaches: (i) had a heightened awareness of their organisations' critical success factors and key performance indicators, (ii) paid greater attention to the multi-dimensional nature of performance, incorporating both financial and non-financial dimensions, and (iii) did intuitively transfer a more integrated way of thinking about performance to their SIDM practice. They spoke more about non-financial aspects of investment projects as being crucial to project success and were more likely to acknowledge the links between financial and non-financial aspects of project performance. Hence, while BSC-type thinking was not being formally adopted in SIDM practice, we saw signs that it was becoming inculcated in managers' thinking. Therefore, it was impacting their decision-making, even if this was implicit rather than explicit. We did not focus on the post-audit review stage of SIDM in our study. However, we found that two companies (both food manufacturers) had well-developed post completion audit procedures to check actual performance (especially profit) against estimates.

In summary, there is much potential for organisations to develop their formal SIDM policies, guidance and procedures. This will allow them to better capitalise on the more integrated and balanced decision-making that can be achieved via a multi-dimensional approach to identifying and monitoring strategic project appraisal criteria and evaluating the subsequent performance of strategic projects.

2. Background: exploring the relationship between performance management and strategic investment decision-making

First, we summarise the advances in performance measures and management systems that have become established in recent years. Then we draw on the less well-researched area of SIDM practice to see if and how that has changed over a similar timescale. This leads us to the main research question and objectives, and explains our motivation for research that explores the relationship between the two.

2.1 ADVANCES IN PERFORMANCE MANAGEMENT: THE RISE OF A MULTI-DIMENSIONAL APPROACH

A key advance in performance management has been the development of approaches that attempt to balance the traditional focus on financial performance with other dimensions of performance that are normally considered 'non-financial'. The French Tableau de Bord and Lynch and Cross's (1991) Performance Pyramid are amongst these. However, by far the most prominent has been Kaplan and Norton's (1992) Balanced Scorecard (BSC). The BSC attempts to link financial results to three other dimensions of performance: customers, internal business processes, learning and growth. Despite some criticism of the BSC from both theoretical and practical points of view, research suggests that, twenty-five years later, use of the BSC has become widespread. However, it is not always called a balanced scorecard and it does not always fully employ the intended cause and effect chains or links between performance measures and incentives. The 'Conceptual foundations of the balanced scorecard' by Kaplan (2009) explains this in detail.

The conceptual foundations of the BSC started with a perceived need to improve organisational performance by translating strategy into objectives, measures, targets and initiatives that would lead to better outcomes. The BSC had at its heart the vision and strategy of the organisation. Although financial metrics are still seen as the ultimate measures of company success, at least in profit-orientated firms, additional metrics from the three other BSC perspectives are considered drivers of ultimate financial success. That is, good performance in the non-financial perspectives should 'drive' good financial performance in an assumed causal relationship. An example of this might be improvements in customer satisfaction leading to enhanced repeat sales and, in turn, better financial results. There was also an intended link with incentives to help translate strategy into action. Speckbacher et al. (2003) defined three levels of BSC use, where type one (without causal links or incentives) is still defined as BSC adoption. Type two would have explicit causal linkages and type three would have links to incentives.

However, critics of the BSC have noted several practical issues with its use. In particular, little guidance is given on how organisations should select appropriate KPIs for its three non-financial performance dimensions. Furthermore, assumed causal linkages between the four dimensions are rarely tested and may not actually exist. Also, organisations other than profit-driven companies will need to change or re-label the dimensions of the BSC according to their own strategic priorities and context. Given these practical issues, it is often the

case that organisations use a 'BSC-type approach', which attempts to integrate multiple dimensions of performance, rather than a fully-formed BSC as Kaplan and Norton might have envisaged it.

Regardless of the exact form a BSC-type performance management approach takes in practice, in terms of the number and names of the perspectives etc., we might expect that using such an approach would lead to key strategic performance measures becoming embedded in the minds of organisational managers who are also involved in SIDM. But what do we know about decision-making practice in the SIDM domain? We summarise the key elements of recent research on the SIDM process below.

2.2 STRATEGIC INVESTMENT DECISION-MAKING PRACTICE: IS IT KEEPING UP?

The literature on SIDM does not always distinguish strategic investment decision-making from capital investment decision-making practice (sometimes referred to as capital budgeting). It has mostly traced trends in the use of various financial analysis techniques such as discounted cash-flow analysis and (to a lesser extent) risk analysis. Viewed from a BSC perspective, its focus has been firmly on the 'financial' dimension of project evaluation. However, some research has ventured further to examine how new investment opportunities are identified, developed (at an early screening stage) and considered in different organisations and how their non-financial aspects are incorporated into the decision-making process.

In addition to identifying between five and seven steps in the SIDM process, a special report by Harris (ICAEW, 2011, p. 4) characterises eight types of projects that have distinct characteristics, such as new manufacturing technologies, new buildings, new product developments and business acquisitions. Overall, SIDM literature suggests that the processes organisations use to evaluate these differing projects, which may follow professional body guidance (for example, ICAEW, 2009), tend to be generic rather than project-type-specific. However, Harris (2011) suggested strategic project risk appraisal should be type-specific.

Another finding is an apparent disconnect between the financial analysis of projects, often presented in an appended spreadsheet, and the 'non-financial' narrative that discusses the pros and cons of the project case. This prior research suggests that SIDM practice may not be keeping up with developments in the performance management domain. The latter is more advanced in terms of integrating financial and non-financial considerations and reflecting the specific strategic goals of the organisation (and, potentially, its strategic investment projects). Research on SIDM practice also shows a lack of well-developed post-completion audit processes being followed in most organisations, certainly in the UK.

Further areas of research not typically associated with the SIDM literature, but relevant nonetheless, deal with the non-financial outcomes of projects. Work on social and environmental accounting, for example, provides a framework for measuring the social and environmental outcomes of a project as well as the resources utilised and economic outcomes. Similarly, the emergent integrated reporting literature recognises six forms of capital that extend beyond the usual narrow and financially-focused view adopted in the SIDM literature. This strand of literature encourages decision-makers to consider

manufactured (tangible) capital, human and intellectual (both intangible) capital, social or relationship capital and natural (environmental) capital in addition to financial capital.

The integrated thinking/reporting movement has the potential to address a key criticism of traditional capital budgeting made by practitioners in knowledge-based organisations such as professional firms, ie, focusing on financial capital where human and intellectual capital may be more important. Like the multi-dimensional BSC approach, these 'multi-capital' ways of thinking about organisational performance may be starting to impact SIDM processes (eg, see Vesty et al., 2015), though this is an under-researched area.

To sum up the SIDM research literature, we conclude that there is no significant evidence to suggest that innovations in SIDM are keeping up with those seen in the performance measurement literature.

However, since managers in organisations - who are now evidently familiar with BSC-type PMS and a plethora of non-financial performance indicators - are likely also involved in SIDM processes, we may reasonably expect that they have such measures in mind when appraising investment projects. This knowledge transfer and the potential for a multi-dimensional perspective to inform SIDM theory and practice is what we explore in this study.

3. Research questions and method

This study aims to examine if and how advances in multi-dimensional performance management approaches, such as the BSC, have impacted the practice of strategic investment decision-making. This aim is addressed via four key research questions that guided our case studies:

- Do the critical success factors and KPIs used in the organisation reflect a multi-dimensional approach to PM?
- How are strategic investment decisions (SIDs) made in the studied organisations?
- Can a link be seen between the use of multi-dimensional PM approaches and SIDM practices?
- Based on these findings, what can be learned to enhance the practice of SIDM?

To enhance the relevance of our findings to SIDM practice in general, and to capture the complexity of that practice, we obtained data from organisations engaged in a range of strategic investment decisions. Also, we wanted to examine SIDM in organisations that had differing levels of use of multi-dimensional PM approaches.

Data has been collected from interviews with managers at different levels in selected case organisations as well as from company documents such as strategic plans. The six organisations included in our study form three loosely-matched pairs. Each pair is located in the same geographic region (UK, Nordic or Egyptian) and the same industry (higher education, food processing and light manufacturing, respectively). Hence, each pair of organisations faces comparable economic and operating conditions. Four organisations have profit objectives, so we may expect them to focus on financial capital, while two are not-for-profit and may focus more on human, social and intellectual capital. However, within each pair, the two organisations differ in the extent to which they have adopted a multi-dimensional PM approach. In each pair of organisations, one has actively adopted a multi-dimensional approach to performance management while the other has not, using Speckbacher et al.'s (2003) definition of type 1 BSC use. Our expectation was that the three organisations we classify as BSC adopters (see section 5.1) would likely adopt a similarly integrated approach to their SIDM, while the non-BSC adopters may not.

Using a common interview guide, we conducted in-depth semi-structured interviews with an average of four managers in each of our six case study organisations: the CFO; the CEO, COO or strategic planning manager; a manager of a business unit that had recently evaluated a strategic investment project; and an accountant/analyst involved in that project evaluation. The average length of the interviews was 60 minutes. All except four of the 25 interviews were recorded and later transcribed. Extensive notes were taken where interviewees preferred not to be recorded. We also obtained copies of relevant company documents, including strategic plans, publicity material, project management procedures, financial planning models and capital investment appraisal guides.

To analyse the data, each researcher first annotated the transcripts of their own interviews to identify key themes raised by interviewees that related to the guiding research questions and interview guide. Subsequently, the researchers formed pairs to review and discuss each other's transcripts with the aim of drawing comparisons between the case studies. Finally, all members of the research team met on several occasions to synthesise the findings over the set of six cases and to interpret the data according to over-arching themes and sub-themes relevant to the aims of this study. The findings presented here were therefore reached through a collective interpretation over several iterations.

4. Background to the case studies

The two Nordic case organisations both operate in the food manufacturing sector. One is a large multinational company listed on the stock exchange (case A) and the other one is a large family-owned business (case B). The average financial performance in relation to shareholder expectations during 2013-2017 has been considerably below expectations in A and slightly above expectations in B. Both companies have invested significantly in expanding production capacity both in their home country and abroad during that period by building or developing major food processing plants.

The two Egyptian case organisations both operate in light industrial manufacturing. Case C, established in 1984 as a family-run business, is a medical supplies company, manufacturing products such as disposable syringes. The factory was established in accordance with European standards in design, manufacturing and preparation. It was listed on the Egyptian Stock Exchange in 2009. Case D is a family business founded in 1945 specialising in manufacturing security door locks and cylinders, exporting to around 30 countries in Africa, the Middle East and the rest of the world. It has three factories with over 1000 employees, including nearly 600 trained engineers and technicians. As with most Egyptian companies, they have both suffered from economic and social difficulties due to the extreme changes in the Egyptian political regimes, which has impacted negatively on their local trading conditions, hence sales and exports in particular had become critical to these firms' sustainability.

The two UK case organisations (E and F) are both universities operating from a main campus in the greater London region. Both have a wide range of subjects available for study, but one has more of a 'hard' science background and the other has more of a 'liberal arts' foundation. Both operate in the context of a UK higher education sector that has changed considerably over the last 25 years, where league tables published by newspapers, based on government data and assessments of research and teaching quality, now dominate. Since changes in the funding of universities in the UK and the introduction of student fees, they now operate in a market situation whereby competition is encouraged. Hence the importance placed upon published league tables by prospective students and other stakeholders has grown.

5. Results

5.1 PERFORMANCE MANAGEMENT APPROACHES AND CRITICAL SUCCESS FACTORS

Our first research question was: 'do the critical success factors and KPIs used reflect a multi-dimensional approach to PM?' To answer this, interviewees were asked to express what they considered to be the top three critical success factors in their organisations before explaining how these were translated into the key performance indicators. Table 1 highlights the similarities and differences between critical success factors across cases. They are not shown in any order of perceived priority, but we have grouped them into categories from our analysis according to their perspectives:

- 1 Products and growth
- 2 Quality and brand reputation
- 3 Financial success
- 4 People and relationships
- 5 Society and the environment

This shows an emphasis on products (row 1), markets and brands (row 2), and in cases A to D financial measures (row 3). Case B identifies more non-financial factors and is verified as using a BSC-type approach to performance management and KPIs by interview data, as noted by the CFO:

'Based on strategic value drivers we create KPIs to ensure that we are progressing accordingly. We have a BSC approach in these KPIs. Hence we have four groups where we address customers, internal processes, personnel and financial aspects. By doing this, we can ensure that we act properly to achieve our strategic targets.'

Case C does not adopt a BSC as company executives were not familiar with such an approach. In 2014 the owners of company D decided to adopt a new governance structure in order to separate the ownership from management. The owners' rationale for their decision was that this might increase the company's productivity and its value. The new governance structure was accompanied by a new performance management system that does not focus only on sales figures or a set of financial KPIs. At the operational level, employee performance is evaluated based on achieving short-term targets and financial figures, eg, increasing the customer base or minimising costs. However, directors at the strategic level have their performance measured through setting and achieving long-term strategic plans. Case D's new PMS has the multi-dimensional characteristics of a BSC-type system.

In case E, just one interviewee identified 'solving societal challenges with impactful research', though it is expressed in almost exactly these words in the printed strategy

TABLE 1 - CRITICAL SUCCESS FACTORS

CSF	Case A Food	Case B Food	Case C Medical supplies	Case D Security products	Case E University	Case F University
1	Product development (new products to the markets)	New product development	To be the main supplier for big hospitals and medical institutions	Increasing market share Increase the international customer base	Student numbers Flexibility to Adapt	Student recruitment
2	Strong brands	Quality of products (meeting customer requirements)	International quality standards Updated technology	After-sales service	Student success (employability)	Graduate quality, Student experience & reputation
3	Cost efficiency (high volume production)	Productivity	Minimising costs & competitive prices	Maximising profit		
4		Health & safety of personnel	Strong relationships (eg, banks)	Good corporate governance		Staff profile
5		Environmental impact (sustainability)			Solving societal challenges with impactful research	

document, so might presumably be shared by others not interviewed for this study. The PMS at Case E was based on a fairly traditional budgetary control system. The organisation had been restructured to have fewer academic departments, which meant fewer budget holders with responsibility for staff headcount (one of the main cost drivers) and financial performance.

Case F has developed a kind of multi-dimensional scorecard, but the dimensions do not follow those in the BSC and the dominant perspective is the student (customer). Examples of such KPIs include student satisfaction at both programme and module levels and quality of research outputs at staff level, being measured at least four to five times a year. Both Cases E and F adopt KPIs that emanate from published league tables, though there was more evidence of these being closely monitored at departmental, programme, module and individual staff levels in case F.

In summary, from our analysis of the critical success factors, documentary evidence and responses to our interview questions, we conclude that case organisations B, D and F have adopted a multi-dimensional PMS more akin to a balanced scorecard, even if that is not what they call it. We have henceforth labelled these as BSC adopters, albeit type 1 in Speckbacher et al.'s (2003) typology. We sought to establish if and how SIDM practice had developed differently in the BSC adopters and non-BSC adopters.

5.2. SIDM PRACTICE OF BSC ADOPTERS

Our second research question was: 'how are SIDs made?' To answer this, we explored the types of project that interviewees had recent experience of before ascertaining the decision criteria used, the different processes followed and the people involved in decision-making. Table 2 shows the types of project and decision criteria used in cases B, D and F. All had recent experience of a major investment in new or expanded production or operations facilities, which were designed to add capacity. Each interviewee described at least three recent projects. These were categorised as: buildings, technology or systems, and new product developments.

In case D there were three systems projects in evidence, including a payroll system, a fire alarm system and a new administrative system. Case F were investing in human resources and finance systems as well as buildings, but few New Product Development (NPD) projects were seen as being as significant as new buildings. We therefore asked interviewees to focus on a specific buildings-type project when answering further questions as this type of project was common to all six case organisations.

We asked interviewees to explain the rationale and decision-making process for at least one major project and to share their views on how the project proposal was constructed and approved and what the key decision criteria were. Case B reported that they almost always accept a project proposal where the expected financial return meets the minimum requirements. Sometimes, they accept projects where the expected financial return falls below the minimum financial requirements. Oftentimes these kinds of investments, with a lower financial return, are related to environmental or social aspects and, as a consequence, their degree of 'strategic alignment' may be considered more ambiguous.

The big project in case B involved an investment of tens of millions of Euros in a facility to process grain and was completely driven by growth potential and long-term profitability expectations. Even though case B had a BSC approach to performance management and KPIs, the CFO said:

'We do not have a BSC approach behind the evaluation of our strategic investments. Ensuring strategic alignment as such plays a major role in evaluation, but a BSC approach is not linked to it.'

However, they perceive that improving manufacturing productivity and meeting customers' requirements are of utmost importance when making SIDs, which indicates the customer dimension of the BSC does have an influence on their SIDM.

In case D the dominance of financial measures was beginning to change, as the finance director explained:

‘Recently (after adopting a new governance system) I have been asked to consider all relevant financial and non-financial indicators (eg, employees) in the investment appraisal reports.’

The finance director was struggling to adopt and internalise the new structures implemented at the CEO’s request. The CFO also spoke about the use of cost-benefit analysis to embrace both financial and non-financial indicators. The CEO spoke about employees who ‘should be happy to work in a comfortable place’. Clients’ satisfaction as well as financial figures were important, which suggests that the motivation for a broader approach was his idea. In relation to new product development projects, the CEO also said ‘the product image, market share, customer satisfaction are key indicators for this type of project’, with less stress on the financial outcomes.

The case D finance director said, ‘many factors are considered in accepting/rejecting strategic projects, however, we cannot accept any project if its projected outflows are more than its expected inflows’. This comment indicates that multi-dimensional thinking takes place in SIDM, but that financial measures are still perceived as the most important. The equivalent of the CFO interviewed in case F seemed quite cautious and indicated that the financial case had to be made first.

Table 2, row 1 shows the dominant measures used in SIDM for production facilities development projects, with some of the non-financial factors seeming to have vanished. When it comes to project appraisal, the financial measures of payback, net present value and internal rate of return apparently still dominate, especially in food manufacturing. This reflects the highly competitive nature of their markets and price sensitivity throughout the value chain. Cases D and F have more of a mix of financial and non-financial criteria.

TABLE 2 - DECISION CRITERIA OF BSC ADOPTERS IN SIDM

Project type	Case B Food	Case D Security products	Case F University
New buildings or expanded operations facilities	Payback IRR EVA No non-financials	Financial Employees Clients	Visual impact Affordability
Technology systems		Efficiency	Value for money
New product development (NPD)		Product image, sales growth & market share	Student nos., Entry tariffs Financial impact

Case B uses formal procedures for planning, evaluating and selecting SIDs, with strict formal approval limits assigned to different hierarchical levels. All the major SIDs are approved by the Board of Directors. Top managers always get involved early in the planning of SIDs. The involvement of a committed influential individual plays a major role in selling SIDs to the top managers during the planning phase. Even though case B presents only one scenario (base case) in their final investment appraisal paper for major strategic investments, they always construct and analyse several scenarios. In addition, they invariably conduct sensitivity analysis on the most critical components.

In company D, managers spoke of a whole new governance system being implemented to support the development of the company through its next phase of growth, but post-completion audit (PCA) was not mentioned as part of that. The head of finance in case F explained how the university had developed a new long-range (20-year) financial model to support the SIDM process for buildings projects, specifically to show the governing body (key decision-makers) how existing resources and future net revenues would cover costs in the scenarios presented in the business cases for new buildings. Thus the long-term nature of projects was being recognised. So, while financial criteria were still important, there had been a move away from short-term measures.

Each of our BSC-adopter organisations could be seen to have developed their PMS and elements of their SIDM practice in some ways over recent times. However, more examples of innovative or integrated thinking being applied to SIDM could be seen in cases D and F, two of the three with multi-dimensional PMS. It may have been that recent and planned growth prompted these developments.

5.3 SIDM PRACTICE IN NON-BSC ADOPTERS

In this section we address the same research question for the non-BSC adopting organisations. The COO in case A said of the new meat processing facility, 'this is as strategic as an investment can be'. The investment involved major building works at a new site to replace old facilities and significant investment in manufacturing technology. The large project in case A was expected to produce about a 50% saving in direct labour costs. The CFO said:

'We do not have a non-financial culture. It is really a financial oriented approach. In this project, the business case ended up stating that this is a project increasing heavily our cost efficiency.'

However, the COO in case A indicated that the situation may not be quite as rigid and clear cut:

'First we need to get the numbers straight in order to put it forward in the investment process. However, then the real decision is based on judgement. This is how it works.'

In case C the production director said, 'the quality of our products is the main factor we consider'. However, the CFO said, 'sure, quality is important, but the cost figure is also important'. And then, the finance director said, 'although all financial figures are important, strong relationships with banks and financial institutions are also important'. This reveals

multiple managers with different perspectives having an influence on SIDM, but not explicitly using a multi-dimensional set of decision criteria. Company C made a decision to develop a new product because one of the company’s major customers (a big hospital in Saudi Arabia) asked for a customised specification for a specific product. While the justification for this project was more about meeting customer needs than meeting financial targets, it is likely to help with financial sustainability. In other words, this was not seen as a philanthropic gesture, but an investment in sustainable customer relationships.

In case E the university equivalent of the CFO spoke about the business case for the new building being based on the assumption that, ‘students go around to a different university, they see a shiny new teaching and learning centre and it makes the difference’ to student choice. He moved on to say, ‘there is also the financial case, which is, money has never been cheaper... so why wouldn’t you take it?’ In terms of the three decision criteria he spoke about, the student recruitment rationale was captured in the first criterion, ‘desirability’ (which reflects their top CSF) and the second, a financial case, ‘affordability’. The CSF, ‘flexibility to adapt’, was reflected in the third criterion, ‘functionality’. However, it was obvious that these three criteria were not articulated in priority order. They seemed to be seen as equally important. In both universities there appeared to be a distinct separation between the business case and the financial case. The business case was very influential so long as the university could afford to pay for it or afford the borrowings to finance it, but it seemed the financial case still needed to be made first.

TABLE 3 - DECISION CRITERIA OF NON-BSC ADOPTERS IN SIDM

Project type	Case A Food	Case C Medical supplies	Case E University
New buildings or expanded operations facilities	Payback NPV ROI Sales growth	Financial Health & safety Technology	Desirability Affordability Functionality
Technology systems	Productivity	Quality Sales Productivity	State of the art
New product development (NPD)		ROI, quality & exports	

6. Discussion and conclusions

First in this section we address our third research question: 'can a link be seen between the use of multi-dimensional PM approaches and SIDM practice?' We will then draw some overall conclusions. From our pairs of cases, there seems to be more of a link between multi-dimensional PMS and SIDM practice in the BSC-adopter cases, with company D and university F stressing the longer-term planning horizon and giving more examples of non-financial considerations. While none of our BSC-adopters told us they used a BSC approach in their SIDM practice, it was clear that there was a transfer of thinking, so managers did intuitively consider a range of non-financial criteria, even in case B.

When decision-makers spoke about their SIDM practice it was clear that, once the financial criteria had been met, they did take account of non-financial aspects in their discussions. It seems most interviewees had never really considered using a more structured multi-dimensional approach to project appraisal. Equally, most interviewees across the cases acknowledged that they could or should do more to develop their SIDM practice and seemed open to the idea of more formally considering multiple dimensions, while ensuring affordability of projects and financial sustainability.

The Nordic companies both had well-developed PCA procedures, which were absent in the Egyptian companies. In terms of post-completion audits, both companies A and B had well-developed procedures to check actual performance, particularly profitability measures, against the estimates used in the pre-decision analysis. This may be context-specific as margins are so crucial in food manufacturing. Interviewees in cases C to E did not mention post-completion audit. In university F, an intention to conduct post-completion audits on NPD projects was discussed to see if the predicted student numbers, gross and net income would be realised and NPD projects would at least break even. It appears that PCA practice may be more strongly linked to industry or geographic sector than to having multi-dimensional PMS. Further research is needed to explore this apparent anomaly.

We summarise here the conclusions reached from our analysis in relation to the questions we posed in our study.

- BSC/multi-dimensional performance approaches are influencing managerial thinking (driven by a combination of external pressures).
- We found evidence that SID-makers may be intuitively transferring a 'multi-dimensional performance' way of thinking into their SIDM, supporting our expectation that advances in PMS have the potential to inform SIDM.
- Inconsistent understandings of and ways of expressing critical success factors in some of our case organisations suggest a need for a 'common language' to embed strategic goals.
- However, we found no evidence of organisations, even those using BSC-type approaches for PMS, explicitly moving to a multi-dimensional, multi-capital approach in their formal SIDM procedures.
- Part of the apparent reluctance to integrate more non-financial performance metrics into SIDM may be due to the need to incorporate non-structured data and present it in a way that has not been enabled by any market leading software or standard reporting templates.

In sum, strategic thinking has a big role to play in SIDM, but some organisations still over-emphasise the 'financials' of major projects. Explicit multi-dimensional and multi-capital analysis could provide a structured way of bringing more non-financial considerations into SIDM.

7. *Practical implications for strategic investment decision-making*

This section addresses our fourth and final research question: ‘what can be learned to enhance SIDM practice?’ The findings of our study point to opportunities for organisations to further develop their PMS and/or SIDM practice in a variety of ways. Most could benefit from incorporating multi-dimensional, multi-capital project considerations more formally into their SIDM practice to achieve better alignment of projects to the critical success factors. The differing nature of specific project types bring generic, ‘one-size-fits-all’ SIDM procedures into question. Rather, buildings, NPDs and technology/systems projects may each benefit from tailored approaches that explicitly incorporate a multi-dimensional view of SIDs.

Our findings highlight the potential for managers to intuitively transfer their knowledge and experiences of PM to their SIDM practice. Hence, organisations that develop multi-dimensional PM systems may benefit from enhanced multi-dimensional thinking in their SIDM. There is an opportunity to consider the internal business process (including technology) aspects of projects more explicitly, since our cases showed this to be a relatively neglected aspect of SIDM thinking. The use of post-completion audit to support the learning and growth dimension of SIDM, via following up on both financial and non-financial project critical success factors, may help to link BSC-type PMS to SIDM more explicitly.

7.1 CHECKLIST FOR MANAGERS

Can you identify how a strategic investment project supports the KPIs/critical success factors that are the focus of your organisation’s PM system?

Can you identify the dimensions of performance (eg, using a BSC approach) that a SID project is expected to impact, and how they link together and drive each other?

Have you considered the effects a project is likely to have on internal business processes?

Do you explicitly consider the links between the non-financial and financial aspects of SID projects?

What additional information might you collect to better understand the multi-dimensional outcomes of a proposed SID project?

Do you follow up on both the financial and non-financial aspects of performance that were expected from a SID via a post-completion audit process?

7.2 ACTION POINTS FOR ORGANISATIONS

These findings suggest the potential for organisations to explicitly recognise the multi-dimensional aspects of SID project performance by improving the connections between their PMS approach and their SIDM policies and practices.

Some ways of doing this might include: encouraging the explicit consideration of how SID projects impact internal business process dimensions of the business (largely missing in our case studies); ensuring that project post-completion audit supports the learning and growth aspect of SIDM; and explicitly considering the causal relationships between dimensions of a SID project's expected performance, as per the BSC. An example of this last approach would be explicitly analysing how a project's financial outcomes will be driven by non-financial outcomes across other dimensions of the project, thus better integrating the non-financial narrative with the financial analysis of a project.

Ensure that SID policies, procedures and guidance documents encourage a multi-dimensional consideration of project outcomes that match the organisation's identified critical success factors and, hence, strategy.

Make sure that discussions of SID projects explicitly examine the assumptions being made about how aspects of the project's performance (re its customer, internal business process and learning and growth dimensions) will impact on financial outcomes; ie, ensure that assumed cause-and-effect relationships are adequately interrogated.

Develop SID guidance that suits the particular types of projects considered in the organisation. A one-size-fits-all approach may not work since different project types need different ways of balancing the dimensions of performance (eg, some are more customer-focused; some are more R&D/learning focused; some may be motivated by cost-saving/financial goals).

Develop post-completion audit procedures that explicitly link project evaluations (and consequent organisational learning) to both financial and non-financial aspects of performance, in line with the KPIs in the organisation's PM system.

Ensure that SIDM procedures and guidance are updated whenever organisational strategy, KPIs and PM systems are revised, to maintain consistency between investment decisions and the ultimate strategic aims and performance outcomes they are intended to achieve.

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