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interviewee from questioning the validity of the attributes and from considering other factors in a different sequence or with different attributes.

There is bias in the selection of the unit of analysis by the researcher due to convenience and access. An interview usually makes the data subject to the bias of the interviewer, partly mitigated by the use of a structured interview, which leaves less space for subjectivity. There is a trade-off in the choice of one interviewee as a source of results: on the one hand, it is necessary to gain the answers from someone who is involved in all phases of the process, on the other hand, dependence on one sole source prevents comparison and deeper analysis.

As the purpose of the study is to develop a framework and not test it, it remains to be seen to what extent it is reliable and valid in other higher education institutions setting. As the framework includes several factors, there needs to be more focus on operationalizing each factor and validating its attributes further.

The role and nature of motivation necessary to sustain the balanced scorecard is worthy of more exploration, as it is critical for the success of such a tool. Also, a more elaborate definition of the role of the balanced scorecard in an organization (whether it is only performance management or a tool for strategy communication as well) could help differentiate and explain the ideal approach for its implementation. This could in turn be linked to the scope of communication and cascading of the scorecard to all levels of the organization.

Conclusion and Recommendations

Results highlight that, as every organization is unique with its own set of characteristics, so will be the resulting balanced scorecard. The potential benefits of the management system are likely to be reaped if it is adapted to the needs and nature of the organization. For instance, the design of the BSC at the College of Management and Technology is different in terms of the perspectives identified by Kaplan and Norton and also in terms of its structure that is not built on cause-and-effect linkages between perspectives of the scorecard. Such a BSC structure has also been adopted by some higher education institutions that regard the setting of their organization as more complex than that of for-profit companies. The latter have the clear goal of maximizing shareholder value and thus every cause-and-effect linkage will have to eventually serve that purpose. Higher education institutions have a more complex role in society and a different set of stakeholders with the priority not given to profit-generation. Notably, the question of cause-and-effect has also been questioned in the for-profit context, as it is quite complex to judge its effectiveness logically and empirically.

An interesting finding is the question of motivation to sustain the drive of achieving BSC targets. Even though the idea of linking BSC result achievement with employee compensation was considered inapplicable per case study results and thus eliminated from the interview questions prior to the actual case study, the subject of motivating employees to keep achieving results was brought up unprompted as a limitation to successful BSC implementation. This signifies its importance and echoes the concerns mentioned in literature of resolving such a topic in the realm of higher education institutions.

Limitations and Directions for Further Research

This research design of this dissertation has some limitations. The use of a case study makes it difficult to generalize its findings, as the unit of analysis is not representative for all higher education institution contexts. Using a single-case design – though imposed by the lack of other organizations fitting the criteria within the geographic and budgetary constraints – magnifies the issue of generalizability.

Also, choosing a structured interview prevents in-depth probing questions and flexibility in gaining more insights beyond the questions posed. Defining the potential success factors as well as their attributes in advance could discourage the

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13. Automating the BSC

The use of standard software i.e. Microsoft Office applications to manage the scorecard at the CMT helps employees generate reports and disseminate them timely.

14. Motivation and Linking Employee Rewards with BSC results

This factor was considered inapplicable in the pilot case study as it is not compatible with the AAST organizational culture or policies. The complexity of this issue is addressed in literature covering non-profit organizations (Greiling, 2010) and for-profit (Schneider and Vieira, 2010; Umachev and Willet, 2008). Although it should be a motivation tool to reward achievement of BSC results, it could backfire easily if employees feel injustice or inability to influence the results they are supposed to achieve. However, the findings of the case study reveal that motivating employees, in any form, is necessary for the sustainability of the balanced scorecard.

15. Regular Reporting

Findings confirm the attributes of regular reporting by Assiri, Zairi, and Eid (2006) and the results of the BSC can be integrated into the regular reporting system as reported by (McDevitt, Giapponi, and Solomon, 2008; Philbin, 2011).

16. Problem Solving and Action Planning

The attributes set forth by Assiri, Zairi, and Eid (2006) have been confirmed in this case study.

17. The role of quality assurance units

Also, the findings shed light on the association of BSC implementation with quality units, a phenomenon that was evident in literature on higher education institutions. The balanced scorecard could require changes in culture and management of processes in some organizations, causing disruption and requiring a paradigm shift. However, this shift can be alleviated by considering the success factors confirmed in this research and by depending on existing teams, as was the case with the Quality Unit at the College of Management and Technology.

perspective and 30 for the whole BSC and argue that measures should be reassessed frequently.

8. **Cause and Effect Linkage**

Cause-and-effect linkage between BSC perspectives is not evident in the case of the CMT, which is common in some non-profit organizations (Cullen, 2003; Greiling, 2010). However, some universities do display cause-and-effect relationships in their BSC designs (McDevitt, Giapponi, and Solomon 2008; Papenhausen and Einstein, 2006; Philbin, 2011). The concept of causality in the BSC is debated (Norreklit, 2003) and it is presumably linked to how each organization views its vision, mission, objectives, and stakeholders.

9. **Benchmarking**

Benchmarking is considered as a success factor by Assiri, Zairi, and Eid (2006) in the sustainability stage of BSC application. However, the findings reflect that benchmarking was only relevant in the planning and design stages in order to set targets. It is not performed continuously as it would be too time consuming and would require data about competitors that is likely to be difficult to get.

10. **Cascading the BSC**

Cascading the BSC to all organizational levels was considered inapplicable in the pilot case study and thus eliminated from the interview. Upon inquiring about the communication of the BSC to all organizational levels, it was confirmed that it is only targeted to middle management and those directly involved in tracking performance measures. Thus, it is confirmed that the cascading is limited to some organizational levels. This is reported in some implementations as organizations do not cascade the BSC all the way to individuals' levels (Greiling, 2010). However, Kaplan and Norton argue that it is necessary to make strategy everybody's job.

11. **BSC Implementation Approach**

In contrast to the attributes of the BSC top-down implementation approach defined by Assiri et al. (2006), there is emphasis on horizontal implementation at the CMT. Communication is also restricted to the scope of the committee involved in the BSC and not the whole organization, which fits with the implied role of the balanced scorecard at the CMT as a performance management system and not a strategy communication tool.

12. **Information System Design**

Even though the software used to manage the BSC is not customized for it as recommended by Marr and Neely (2003), it is considered sufficient and efficient enough at the CMT.

2. **BSC Team**

As some studies recommend (Greiling, 2010; Schneider and Vieira, 2010), the team responsible for managing the BSC is interdisciplinary. In the case of the CMT the team includes faculty from every department. There is also a process owner as Haapasalo et al. (2006) suggest, which is the Head of the Quality Assurance Unit.

3. **Central Administration Alignment**

Conflict between the head quarters, whether in for-profit or non-profit organizations, could become a crippling barrier for BSC implementation (Bourne, 2002). The discord between corporate and business unit objectives as cautioned against by Umachev and Willet (2008) is avoided at the CMT as the business unit incorporates central administration's budget provisions and terminology in its BSC design. The alignment starting in the design phase could be a factor of sustaining the tool.

4. **Communicating the BSC**

The findings reflect that communicating the BSC is selective and only directed at those who are directly involved in implementation. While no barriers are mentioned to expanding the communication to other internal and external stakeholders, the narrower scope of communication could be attributed to the role that the balanced scorecard plays at the CMT, which – as evidenced by the balanced scorecard document – is rather one of performance measurement and not of strategy communication as suggested by Nistor (2009).

5. **Mission, Vision, Values, Strategy**

As asserted in literature (Bose and Thomas, 2007; Chan, 2004; Decoene and Bruggeman, 2006) the design of the balanced scorecard should be linked to the vision, mission, and strategy. This link is most evident in designing the BSC around the strategic goals of the CMT.

6. **Training**

The findings of the case study confirm the importance of training as mentioned by Chan (2004) and that it is applicable as detailed by Assiri, Zairi, and Eid (2006). As the faculty at the CMT essentially teach management, their awareness of the concept of the BSC and its rationale is evidently adequate which facilitates the process.

7. **Objectives, Measures, and KPIs**

Concerning the success factors "setting objectives and measures" and "KPIs", they were considered as inapplicable by respondents in the pilot case study as most measures and KPIs are dictated by central management and are difficult to changed. This was confirmed in the case study as the success factor "measurement assessment" was also deemed inapplicable. The findings contrast the recommendations set forth by Assiri, Zairi, and Eid (2006), which limit the number of measures to five per BSC

Table 3: Framework of BSC Implementation Success Factors

Success Factors throughout all Stages			
BSC Perspectives	BSC Team	Executive Commitment	Central Management Alignment
Success Factors by Stage			
Learning Stage			
Learning and Innovation			
Planning Stage			
Communicating BSC		Initial Plan	Stimulating Culture
Design Stage			
Mission, Vision, Values, Strategy		Training	Benchmarking
Implementation Stage			
Implementation Plan		Information System Design	
Sustainability Stage			
BSC Automation		Motivation	
Benefits and Realization Stage			
Regular Reporting		Problem Solving And Action Planning	

The results confirm that some factors that are derived from BSC implementation in the for-profit sector based on the roadmap by Assiri, Zairi, and Eid (2006) are also applicable in higher education institutions with some modifications in their attributes or sequence in the process while other factors are not applicable in higher education as shows in the following section.

1. **BSC Perspectives**

   The CMT adapted the perspectives of the balanced scorecard to its own vision and strategic objectives. This finding confirms the cases reported in literature where organizations adapt the BSC design to the organization's strategy (Greiling, 2010) and mission and vision (Schneider and Vieira, 2010). However, the number of perspectives need not be confined to five maximum, as recommended by Assiri, Zairi, and Eid (2006).

Results and Discussion

Pilot Case Study Results

The pilot case study has the purpose of refining the data collection instrument and adapting it accordingly. Some success factors were considered inapplicable with all their attributes while others were considered applicable in principle but not including all their attributes. The success factors deemed as inapplicable by the interviewees were eliminated from the interview as a stage of refinement prior to the actual case study.

Case Study Results

The BSC process started in 2011 with the planning and design phase as part of the organization's strategic plan. The latter was undertaken by the Strategic Planning Committee based on the mission and vision of the faculty. The plan defines seven strategic goals to be pursued by the CMT in the five-year period 2013-2017. The goals "reflect an analysis of the competitive environment, current funding situation, the needs of stakeholders, and national NAQAAE accreditation guidelines". The BSC is designed to measure the achievement of the organization's seven strategic goals uses these seven goals as perspectives instead of Kaplan and Norton's original four perspectives.

Implementation of the BSC began in June 2013. The BSC is managed as part of the Quality Unit at the CMT. The team includes 20 members. Actual performance is compared with expectations based on the BSC. 80% of the team is academic faculty and 20% administrative staff. The team is cross – departmental with representatives from every department in the CMT. The outlook for the BSC is positive, with no modifications to the structure. Notably, performance goals or budgets may be amended to adapt to new developments.

Based on the structured interview and documentation, the following framework of success factors for BSC implementation in higher education institutions has been developed (Table 3: Framework of BSC Implementation Success Factors).

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Both are internal documents and are instrumental in understanding the context in which the balanced scorecard was developed at the organization. The documents also serve in complementing and corroborating data gathered through the interview, particularly regarding the following aspects:

- The link between the BSC and the mission, vision, and strategic objectives of the organization
- The design of the BSC in terms of perspectives, scope, measures, and budget

Pilot Case Study

In order to refine the data collection instrument and process (Yin, 2009), a pilot case study is conducted. The pilot case unit of analysis is chosen based on proximity, convenience, and access. The Graduate School of Business (GSB) at the Arab Academy of Science and Technology fits the previous criteria and is also relevant as it reports to the same head quarters as the CMT and has faculty that is well informed about the BSC even though it is not implemented at the organization.

Data Analysis

The strategy used to analyze the data is clustering the data gathered through the interview and documentation (Miles and Huberman, 1994), which involves grouping and conceptualizing objects in categories. As the data gathered is rather structured, the focus is on refining the success factors categorized by phases to develop a framework that can be tested in further studies.

Reliability and Validity

Using a protocol increases the reliability of the case study (Yin, 2009) as it details data collection procedures and allows for replication of the research. The case study protocol also helps maintain a chain of evidence. The latter starts with the research questions that are linked to the case study protocol, which should be linked with the case study database, which is finally linked to the case study report. The case study database consists of a raw transcript of the interview. It also includes the two documents used: CMT Strategic Plan and CMT Balanced Scorecard. The validity of this case study is enhanced through data triangulation from different sources. The analysis of interview results and the documentation complement each other and help in validating the data.

The desired outcome of the interview is to develop a framework outlining the success factors of BSC implementations based on empirical evidence. The format of a structured interview is chosen due to the large number of factors examined – over 80 items when cascaded, which makes an open-ended format too long for the participant to remain focused. The instrument is based on the roadmap developed by Assiri, Zairi, and Eid (2006) that contains 27 success factors (SFs) expected to have a holistic impact on successful BSC implementation. Assiri et al. (2006) categorize the 27 SFs in three groups: dominant (3 factors), main (19 factors), and supporting (6 factors). Each of the factors is further cascaded to items in the format of a checklist. Notably, the authors call for further refinement of these factors.

The roadmap has undergone further development to suit the focus of this research. The first development was narrowing down the scope to include only the dominant and the main SFs as the supporting ones would render the interview too broad and long to derive more refined conclusions. The second development was to rephrase the roadmap "checklist" items to statements so as to suit the format of closed-ended questions. Each item of the checklist is evaluated by the interviewee as "applicable" or "not applicable" in light of his/her BSC experience. The interviewee is also asked whether there are any limitations that stand in the way of applying this item. For example, a statement from the interview reads: "Training is conducted for the BSC team in BSC implementation and performance measurement". The interviewee classifies this statement as "applicable" or "inapplicable" and states the limitations (if any) that are faced when trying to apply this statement e.g. "time needed to conduct the trainings". The question of applicability is closed-ended whereas the question of limitations is open-ended.

The interviewee to such a detailed interview would need to fit certain criteria. Ideally, he/she should have in-depth knowledge of the BSC, and be a part of the team that initiated the tool in the organization. It is also preferred that the interviewee be involved in the progress of the BSC and its continuing implementation. Willingness to participate and openness to sharing information are also crucial, as the interview requires critical thinking of the BSC process. For these reasons, the interviewee chosen is the Head of the Quality Unit who was and still in charge of the BSC at the CMT.

In addition to the interview, two documents are used as source of evidence in this study:

- The College of Management and Technology Strategic Plan 2013 – 2017
- The College of Management and Technology Balanced Scorecard

Research Methodology

Research Design

The research question is: "what are the success factors of BSC implementation?" As Yin (2009) notes, some "what" questions require an exploratory research method, specifically when these questions seek to develop propositions for further inquiry, as is the case in this study. Exploratory research can be conducted through quantitative or qualitative techniques (Cooper and Schindler, 2014). The latter would be more fitting to the purpose of the study as it is not yet in the phase of generalizability of findings that is relevant for quantitative analysis. Developing a case study is relevant when there is interest in contemporary events as they unfold rather than historical events that have already concluded. This also applies to answering this study's research question because its value comes from exploring the success factors of the BSC as it unfolds.

Case Study Unit of Analysis

Following the tradition of the research stream on BSC design and implementation in higher education, the unit of analysis is a higher education institution, specifically the College of Management and Technology (CMT) at the Arab Academy for Science, Technology, and Maritime Transportation in Alexandria. The CMT is chosen as the unit of analysis for several reasons; the most significant of which is that it has over three years of experience in implementing the BSC. The CMT has been using the BSC since June 2013 after a planning phase that began in 2011. Unlike most units of analysis in the existing BSC literature in HEI, it provides an opportunity for empirical research on the BSC experience beyond the design and initial implementation, thereby allowing a more comprehensive view of the success factors of the BSC as a whole, not just a phase of its process. Another prime reason why the CMT was chosen is the access of the researcher to its faculty and staff, which is difficult to be granted at another HEI institution in a context tackling performance management. Openness to participation is critical to the credibility of the results of this study, which is enabled by the culture of support for research and improvement at the CMT.

Instrument Development

The two sources of evidence used in this case study are documentation and an interview. In order to determine the success factors of BSC implementation, an instrument is developed for a structured interview with the key BSC practitioner.

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Lawrence and Sharma (2002) argue that the application of private sector metrics and tools negatively affect the very essence of education. However, others (Beard, 2009; Chang and Chow, 1999; Karathanos and Karathanos, 2005; Papenhausen and Einstein, 2006; Philbin, 2011; Umashankar and Dutta, 2007) refute the above statements and provide examples of applying the BSC in an educational environment. Still, there appears to be little consensus among scholars as to how the BSC can be designed and implemented to best fit the context of higher education while retaining the essence of balance that the tool provides. To date, most studies on BSC in higher education either tackle design of the BSC (Bailey, Chow, and Haddad, 1999; McDevitt, Giaponi and Solomon, 2008; Papenhausen and Einstein, 2006; Vermaak and Cronje, 2001) or recount an experience of implementing the BSC at a specific institution in a case study format (Philbin, 2011; Rimar and Garstka, 1999; Schobel and Sholey, 2012).

Research Importance

Since there is little consensus over what makes the BSC work and what stands in its way. Success factors are mentioned sparingly on a case-by-case basis but without a definitive framework that could be applicable for higher education. Thus, there is need for exploring these factors in a setting where the BSC is already applied with the goal of developing such a framework that can be tested in further studies. Beard (2009) argues that the dearth of reported application of the BSC in higher education might not mean that it is unapplicable; but rather that there is not enough awareness of its application as part of strategic management. It is also noted in the literature on BSC in higher education institutions that few of the HEIs (higher education institutions) covered have used the BSC long enough to be able to elaborate on success factors throughout all phases of the tool. Thus, it is important to derive such findings from an institution that has sufficient experience in the BSC to provide valuable insights on the subject.

Research Problem

Due to the lack of research on the implementation of the balanced scorecard in Egyptian higher education, this research addresses the following research question:

"What are the success factors of balanced scorecard implementation in a higher education institution?"

Table 1: Dominant Success Factors

Identifying adequate BSC perspectives
BSC team
Executives and senior management commitment

Source: Assiri, Zairi, and Eid (2006)

Table 2: Main Success Factors

Stage	Factors
Learning	- Learning and innovation
Planning	- Communicate BSC - Initial Plan - Stimulate Culture
Design	- Mission, values, vision, strategy - Training - Set objectives and measures - KPIs - Cause-and-effect linkage
Implementation	- Rolling out implementation plan - Cascading BSC - Information system design
Sustainability	- Automating the BSC - Updating BSC measures and linking it with rewards - Corporate alignment - Benchmarking
Benefits and realization	- Regular reporting - Measurement assessment - Problem solving and action planning

Source: Assiri, Zairi, and Eid (2006)

(2006) developed a "roadmap" for successful BSC implementation according to survey-based findings from 25 countries across companies of different sizes operating in different industries. The roadmap contains 27 success factors (SFs), which are expected to influence the BSC implementation. Assiri et al. further divide those factors into three levels by importance, three dominant, 19 main, and five supporting factors. The dominant and main roadmap factors are used to group the success factors from other studies as it provides an overarching context for the otherwise dispersed factors mentioned in case studies.

Introduction

The balanced scorecard is a popular performance management tool that was designed with for-profit businesses in mind by Kaplan and Norton in 1992. They tried to integrate issues on quality and lean management, financial economics, and stakeholder theory to develop a measurement tool that includes both operational metrics as leading indicators and financial metrics as lagging outcomes in order to drive the company's performance forward. Preferring not having to choose between the financial and the operational, the tangible and the intangible, they incorporated four perspectives of performance in a "balanced" framework that answers four questions; the customer perspective which answers: how should we appear to our customers?

Internal business processes perspective answering: what processes must we excel at? Innovation and learning perspective answering: how can we sustain our ability to change and improve? And the financial perspective which answers: how should we appear to our shareholders?

Its use in for-profit organization has received more diverse studies by researchers, in contrast to BSC for higher education. Most of the existing literature in that sector describes the design of the scorecard rather than the actual experience of implementing it. Implementation is reported through case studies that fleetingly mention why it worked, but it has not been the focus. Additionally, the Egyptian setting left underexplored.

Literature Review

Speckbacher, Bischof, and Pfeiffer (2003) observe that the concept of the BSC is not a static one, partly because Kaplan and Norton continue to expand it in their writings. Another reason why the BSC concept is not static is that it is meant to be a guide, not a "straitjacket" as Kaplan (2010) emphasizes, and is thus subject to customization for each different context and organization. Throughout the past 20 years, the balanced scorecard has been used throughout countries and industries, with usage rates reaching 38% among 13,000 respondents from over 70 countries (Rigby & Bilodeau, 2015).

Success Factors of BSC Application

Despite reports of relatively high adoption rates, the there a lack of an agreed upon framework for success factors required to implement a balanced scorecard (Madsen and Stenheim, 2015). To date, the factors are fragmented through case studies that make up the majority of relevant literature. Assiri, Zairi, and Eid

Success Factors of Balanced Scorecard Implementation:

A case study on a Higher Education Institution

1st Author:
Fadaly, S. Dina, Assistant professor, Arab Academy for Science, Technology and Maritime Transport , College of Management.

2nd Author:
Miss Yomna Younes
Academic MBA

Abstract

The overall aim of this study is to identify how the balanced scorecard can be implemented successfully in a higher education institution. The research could prove valuable for academic staff and higher education administrators by developing a framework that can guide an institution through the process of planning, designing, implementing, and sustaining a balanced scorecard. The unit of analysis is a higher education institution, specifically the College of Management and Technology (CMT) at the Arab Academy for Science, Technology, and Maritime Transport in Alexandria. The two sources of evidence used in this case study are documentation and an interview.

The results confirm that some factors that are derived from BSC implementation in the for-profit sector based on the roadmap by Assiri, Zairi, and Eid (2006) are also applicable in higher education institutions; non-profit organization; with some modifications in their attributes or sequence in the process while other factors are not applicable in higher education.

Success Factors of Balanced Scorecard Implication: A Case Study on a Higher Education Institution

Fadaly, S.Dina
Assistant professor
Arab Academy of Science, Technology and Maritime Transport

Yomna Younes
Academic MBA