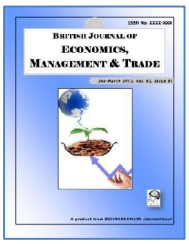

*British Journal of Economics, Management & Trade*
*4(10): 1555-1576, 2014*

**SCIENCEDOMAIN** *international*
www.sciencedomain.org

# Success Comes in Many Dimensions: The Critical Role of the Human Capital and Preparing for the Future in Every Organizational Scorecard

**Alan C. Maltz[1*], Aaron J. Shenhar[2], Dov Dvir[3] and Haoyu Gao[1]**

*[1]Stevens Institute of Technology, Castle Point, Hoboken NJ 07030, USA.*
*[2]Technological Leadership Institute and Tel-Aviv University, United States and Israel.*
*[3]Ben Gurion University of the Negev and West Galilee College, Israel.*

***Authors' contributions***

*This work was carried out in collaboration between all authors. All authors read and approved the final manuscript.*

***Original Research Article***

***Received 17th February 2014***
***Accepted 26th May 2014***
***Published 7th June 2014***

## ABSTRACT

Our paper synopsizes our empirical research over the past twenty years on the components of success across the organization. While many articles detailing multi-dimensional models of success have been published, few of these articles have studied success across all structural levels–the project, the business unit and the corporate levels. While there are clearly some differences at the varying levels, some common themes have developed. Our framework covers a time spectrum from short-term measures (e.g., financial and efficiency measures) to long-term (e.g., investing for the future). This framework could provide a foundation for many organizations to develop success measures throughout its structural levels. We especially note the importance of the role of the human capital and the investment in creating future opportunities. Our research provides guidelines for management on each success dimension.

*Keywords: Success dimensions; performance measures; organizational effectiveness; human capital; human resources management; leadership; efficiency; customer's benefits.*

**Corresponding author: Email: alan.maltz@stevens.edu;*

## 1. INTRODUCTION

What does organizational success mean? Is it the organization's profits, its sales, or cash flow? Is it the current level of growth, or something else? And if success is measured by the company's market value, how could a firm sustain and grow its value year after year? Even prior to the recent series of financial crises, most in the business world realized that financial measures alone do not provide a sufficient basis for measuring organizational success. 'Managing' quarterly results, only emphasized the inadequacy of financial measures such as profit, revenue, and even growth. This is not new. Over forty years ago, Hayes and Abernathy [1] claimed that one of the dangers to the American economy is the pervasive short-term myopia. Executives with financial and legal skills, who know little about their firm's products, markets, and production processes, usually rely on quantitative short-term financial criteria.

Today, many have realized that long-term aspects of any organization's effectiveness are equally critical [2]. Technology-based firms, which operate in markets and environments that evolve rapidly, have to manage with longer-term horizons. Hamel and Prahalad [3], in their bestselling book "Competing for the Future" advocated new ways to look at the modern organization that is facing continuous change. These firms must have the vision to capitalize on emerging opportunities by investing for the future in their core competencies and thusly help shape the future of their industries.

This article represents twenty years of empirical research on the elements of sustainable success throughout an organization. Our journey began looking at the outcomes of discrete business decisions; it became apparent that present business success was the result of decisions made years earlier. Consequently, looking forward, many of today's strategic decisions will only have an effect five or ten year from now.

Thus, in addition to current performance and short-term activities, organizations must focus their attention on decisions and plans dedicated to tomorrow. We concluded, as others, that organizational success should be viewed in multiple dimensions, and focus on different time horizons.

In our quest to understand organizational effectiveness, we explored different structural levels within the organization. We looked at different data samples, and at different times. Our empirical studies addressed separately, the corporate level, the strategic business unit level, and the individual project level. Our previous published research looked at success at the corporate and project levels [4]. We have benefited from important existing concepts such as the Balanced Scorecard [5], but sought to go a step further, by empirically pursuing the critical elements, which constitute success at distinct levels.

We found that organizations would benefit from adapting a multi-dimensional framework, which would be used to scan their entire success landscape at different time horizons-from very short-term to very long-term. Such framework will serve as a basis for the development of specific success measures for each organizational level. While major differences may be found among hierarchical levels, we also found that some common themes extend across all levels. The most important is the human capital element. As many would agree, leading people is perhaps the most critical part pertaining to organizational success; yet, it has been largely missing as a stand-alone dimension in previous frameworks. The second theme that is recurring across levels is 'preparing for the future'. As in the people dimension, in today's rapid world, preparing for the future or in other words, creating future opportunities, must be

addressed at all levels and almost by all managers. The purpose of this article is to summarize the lessons we learned from our combined studies on success dimensions, as well as to discuss the critical role of the human and future dimensions at each organizational level.

The next chapter begins by describing the process of studying the entire multi-dimensional success assessment framework. We then devote specific chapters to each level–the corporate, the business unit, and the project. We then specifically address the role of people and their leadership, as well as the role of preparing for the future and how can this part be nurtured by selecting the right measures. We conclude with several organizational and managerial implications.

## 2. THE DYNAMIC MULTIDIMENSIONAL SUCCESS FRAMEWORK

Perhaps the most important work in recent years about organizational success measures is the Balanced Scorecard, which was developed by Kaplan and Norton [6,7]. Kaplan and Norton's assertion is that traditional financial accounting measures (e.g., ROI, EPS) can give misleading signals for continuous improvement and innovation, and are out of step with the skills and competencies needed by today's organizations. The Balanced Scorecard is a multi-dimensional framework that translates a company's strategy into specific measurable objectives. This includes a combination of financial measures, indicating results of actions previously taken, and operational measures that are drivers of future performance. Typically, 15-20 measures are developed in four major dimensions, which address different perspectives–financial, customer, internal, and innovation and growth. These dimensions manifest themselves in various forms for different organizations. For example, innovation is treated as an internal perspective measure, while developing new technologies is part of the growth perspective.

The Balanced Scorecard represents a critical step in understanding organizational success, and while it has a substantial impact on strategy formulation and implementation, some limitations and difficulties have been noted. While Kaplan and Norton [6] did provide a "learning and growth" dimension, the broader role of managing the human capital was not specifically discussed. For example, Atkinson et al. [8] suggested that The Balanced Scorecard model was incomplete because it fails to adequately highlight the contributions that employees and suppliers make to help the company achieve its objectives. The argument is that learning is only one part of managing people; other aspects such as motivation, retention, should also be considered. Similarly, Smith [9] noted that The Balanced Scorecard fails to account for the role of "motivated employees", a critical issue especially in the service sector. And Edvinsson and Malone [10] suggested that the Balanced Scorecard is only part of what they call the Intellectual Capital of the firm, which consists of the human capital and the structural capital.

While the Balanced Scorecard is widely accepted in a broad range of profit and non-profit organizations; e.g., financial services [11], higher education [12], and health care [13], during our research interviews, many managers frequently mentioned the lack of a people component in The Balanced Scorecard. The most notable problem in The Balanced Scorecard's view of organizational success is therefore the lack of focus on the company's human resources dimension. Many managers frequently mentioned during our research interviews the need for people orientation. For example, Best Foods (now part of Unilever) [14] has been using The Balanced Scorecard for years; however, the company felt it necessary to add a fifth dimension, "People Development" to address this critical issue.

Similarly, European firms (e.g., Nokia) have emphasized the importance of human resources management and the way they treat their employees as a critical component to their success. These realizations have prompted companies to include specific assessment of management training, slack time, knowledge worker retention, and issues relating to the company's global employee population. Consequently, these observations have motivated us to look further into the human dimension in assessing organizational success.

## 2.1 Toward a Dynamic Model of Success

Management still struggles with the entire domain of performance management, and is provided with an overwhelming deluge of performance data. As a result, it is difficult to determine which data is critical to the organization. As a result, many firms continue to focus on short-term financial criteria such as sales, revenue and net income.

Traditional models of accounting alone are no longer sufficient. Corporate financial statements are proving to be only static representation of what goes on in the modern organization–or rather, what "happened". The creation of new technologies, ventures, and skills and are only apparent much later in the future. However, their presence in organizational success measures is seldom observed. Rogers and Ghauri [15] posited that while measurement at the project level yields great insights and lessons for New Product Development success, assessment is also needed at the firm-level. Success at the project level, does not always improve the firm's competitiveness. The difficulty in defining organizational success was evident in the Conference Board's concerns which was reported in "New Corporate Performance Measures" [16]. This report discussed the increasing corporate focus on performance, along with the inadequacies of traditional financial measures in the dynamic turbulent environment of today.

Once the idea that organizational success is multi-dimensional has been recognized, it is the role of the researcher to identify the specific dimensions, with which an organization can monitor itself. Any framework for success assessment should look, however, not just at different dimensions, but also at different time horizons, from the immediate, short-term view, which relates to months or quarters, to the very long-term, which is focused on years to come. In the three studies that we conducted and are summarized here, we have taken this view. We tried to identify what are the specific dimensions, which are typical to various organizational levels, and what time frames are associated with each dimension.

From our studies, a dynamic view of organizational success developed, with multiple dimensions representing temporal horizons–from the short to long-term. An organization needs to perform well across these dimensions to sustain their success. Performing well in the short-term does not assure long-term success, and likewise, poor short-term performance does not necessarily long-term failure. We call our model the "Dynamic Multidimensional Success Model" or DMDS, and it will be described more fully in the following discussion.

Taken together, the success of most organizations can be divided into five major dimensions, each consisting of several specific measures (see Table 1). These dimensions represent different time horizons. Furthermore, at each organizational level we found the human element to be critical at different times. The emergence of the human dimension, however, was not clear at the outset of our studies. Only after integrating all levels were we able to place the people's issues across levels (the shaded areas in Table 1).

Analogously, we found that the "preparing for the future" dimension provides a significant role in looking at long-term organizational success. We thus summarize these two dimensions in separate chapters toward the end of this paper.

**Table 1. Overview of "dynamic multidimensional success model"**

| **Success dimension** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| **Time horizon** | **Very short** | **Short** | **Mid-term** | **Long** | **Very long** |
| **Organization level** | | | | | |
| Project | Project efficiency | People skills | Impact on customer | Direct business success | Preparing the future |
| Business unit | Profitability | Orders and marketing | People Development | New opportunities | Future infrastructure |
| Corporate | Financial performance | Market/ customer | Process | Human capital | Creating the future |

Our studies do not imply that there are universal success measures for all projects, strategic business units or corporations. We do suggest that our results act as guidelines as an organization develops its strategic plans and develops its measures for sustainable success assessment and growth.

As each organization is different, we would suggest that the various measures and dimensions would be utilized with varying degrees of importance. However, the DMDS model provides a fair basis with which to start the journey of success assessment for most organizations. In the next chapter we begin by discussing the first level, the corporate level.

The details of our research methodology can be found in Appendix A.

## 3. THE CORPORATE LEVEL

The corporate level represents a collection of business units and centralized units such as IT, Human Resources, central R&D, Financial, and Legal services. The corporation exists to create and increase value for the shareholders, offsetting the cost of this centralized overhead. Transferring and exploiting competitive skills across the business units and using them to gain competitive advantage defines the core competency concept, representing the sum of learning across individual organizational units [3]. The corporation's effectiveness therefore depends on activities and synergies across the various business units–some will have immediate visibility, other will be evident in the long-term. The resulting synergies have to be measured from several vantage points. It has to reflect the company's short-term (financial) performance, and importantly its success in establishing the vision, direction, and foundations for the future.

**Table 2. A summary of suggested success measures for differing firm types**

| | Financial | Market/customer | Process | Human capital | Preparing for the Future |
|---|---|---|---|---|---|
| Baseline | Sales | Cust. satisfaction index | Time to market with new products/svcs | Retention of top employees | Depth and quality of strategic planning |
| | Profit margin | Cust. retention rate | Quality of NPD & PM processes | Quality of leadership development | Anticipating & preparing for unexpected changes in the ext. environment |
| | Revenue growth | Service quality | | | |
| High technology firms | | **+**customer benefits from product/ services | **+**cycle time<br>**+**quality of innovation processes | **+**quality of prof. devel.<br>**+**employee skills training | **+**investment in R&D (% of sales) |
| Low technology firms | | **+**responsiveness | | **+**encourage employees to suggest/ test new ideas | |
| Small firms | **+**cash flow | | | **+**encourage employees to suggest/ test new ideas | **+**investment in new mkt. development |
| Large firms | +EPS<br>+stock price | **+**market share | | +employee skills training<br>+Quality of corporate. culture development | **+**Investment in R&D (% of sales) |
| Firms- product life Cycle <3 years | | | **+**cycle time | | |
| Firms- product life Cycle >3 years | | **+**responsiveness<br>**+**company's reputation and image | **+**quantity & depth of standardized processes | **+**employee skills training | +investment in new technology |

*Developed from: (17) Maltz, A.C., Shenhar, A.J., Reilly, R.R.: Beyond the Balanced Scorecard: Refining the Search for Organizational Success Measures. Long Range Plann. 36, 187–204 (2003)*

Our research at the corporate level [17] of 180 U.S. firms have resulted in the following five dimensions (see Table 2 above).

### 3.1 Financial Performance

This is the traditional short-term dimension of organizational success. It provides recent period results such as sales, margin and revenue growth on current services and products resulting from strategic decisions made years ago.

### 3.2 Market/Customer

Key measures in this dimension include customer satisfaction index, customer retention rate and service quality, as well as company's reputation and image.

### 3.3 Processes

This dimension represents the company's set of core competencies and its ability to deliver these competencies to its different collection of businesses while exploiting them as fundamental customer benefits. Process measures included 'time to market for new products and services', 'quality of new product development and project management processes', 'quantity and depth of standardized processes', 'quality of manufacturing processes', and 'quality of its innovation processes'.

### 3.4 People and Leadership

Much research has linked the management of the firm's human resources to its performance, highlighting the criticality of a 'People Development' dimension. Crook et al. [18] indicated that theory at both the micro and macro level predicts that investments in superior human capital generate better firm-level performance. Specific measures that were found significant in this dimension include 'retention of top employees', 'quality of professional/technical development', 'quality of leadership development', 'encourage employees to suggest and test new ideas' and 'employee skills training'. However, theory and research during the years tend to be focused at the organizational level of analysis. How human capital and social capital are created through HRM practices or how they are related to group or individual behavior are not explained or demonstrated explicitly [18].

The role of project team leadership has been studied extensively in recent years. A wide-ranging literature review on leadership style as a success factor on project success was provided by Turner and Muller [19]. Project leadership was one of the strong predictors of success [20] for large capital projects  Surprisingly, a few studies have indicated a mixed result on project performance. Belout and Gauvreau [21] while finding a link between the personal factor and project success (non-significant) they have indicated that this link does exist according to life cycle stage. Project success is also effected by the industry, project complexity and the age and nationality of the project manager [22].

### 3.5 Preparing for the Future

This final and longest-term dimension is aimed at its ability to see the future prior to its competitors and customers and to define new needs that no one has been able to define previously. Its ability to prosper depends on its ability to make a difference to customers, by

creating unimagined products, and exceeding the expectations of customers and competitors.

Numerous measures could be utilized for this dimension. Is there an explicit process for identifying and exploiting new opportunities beyond the boundaries of existing business units? Are we providing investment in new technologies? Does the company's opportunity horizon extend beyond existing product markets? Are there processes to identify new and unarticulated needs for customers, which are not presently met?

### 3.6 Baseline Measures

In addition to defining the Success Dimensions at the corporate level, our research shows that one set of measures cannot fit all organizations. Rather, different types of organizations should employ different measures of success. Specific industries may have their own key metrics. For example, ROI may be a critical measure for investment firms, while market position can be critical to firms in competitive markets. Individual firms would look, among other things, at their industry, technology and strategy, and would perform a sensitivity analysis as to the applicability of these measures to their own unique requirements.

To begin with, a company may use a set of "Baseline Measures" that was identified in our research (shaded area of Table 2). Based on the specific company type, a number of suggested refined measures can then be added for the individual firm. For example, a high-technology organization may consider adding 'customer benefits from products or services', 'cycle time', 'quality of innovation processes' and 'employee skills training' to their performance metrics. Similarly, a firm with a relatively long product life cycle may consider the addition of 'quantity and depth of standardized processes', 'company's reputation and image' and 'employee skills training' to their measures. The final set of measures would depend on the firm's strategy, technology, and the particular industry and environment that a firm competes.

### 3.7 An Example from a Study of U. S. Corporations

To demonstrate the effectiveness of the multidimensional dynamic framework and its ability to address longer term business concerns, we have included in (Fig. 1) the relative ranking of five companies among the 76 public companies that were included in our study, in each of the five dimensions:

Company ***a*** is a software services provider. It fared rather poorly across four of the five dimensions. One of its major businesses has collapsed during the time of this research as a result of an invasion of new technology. Its financial positions as well as future prospects looked weak. In fact, with its stock price so low, the company's management considered going private as a way of reducing expenses.

Company ***b*** is a successful licensed clothing manufacturer with high relative rankings in all dimensions except the 'Customer'. At the time of the survey they perceived some issues with a major customer, which has since been resolved. Their processes, people and future measures were strong. The company was sold with its stock price increasing more than 350% over three years.

Company ***c*** is a major engineering firm with relatively poor rankings in all dimensions. It has

endured major reductions in staff over many years, and has recently replaced its CEO with an outsider. This company is in survival mode.

Company ***d*** is a leading financial services organization with high rankings in all dimensions. They are a leader in developing new products and understand their customers and markets; they are building a future.

Finally, company ***e*** serves a unique niche in the global technology market. Although their short-term financial ranking was low (they were investing for the future), their longer-term rankings were very high. As a result of their future potential, this relatively new company was acquired for a very significant price.

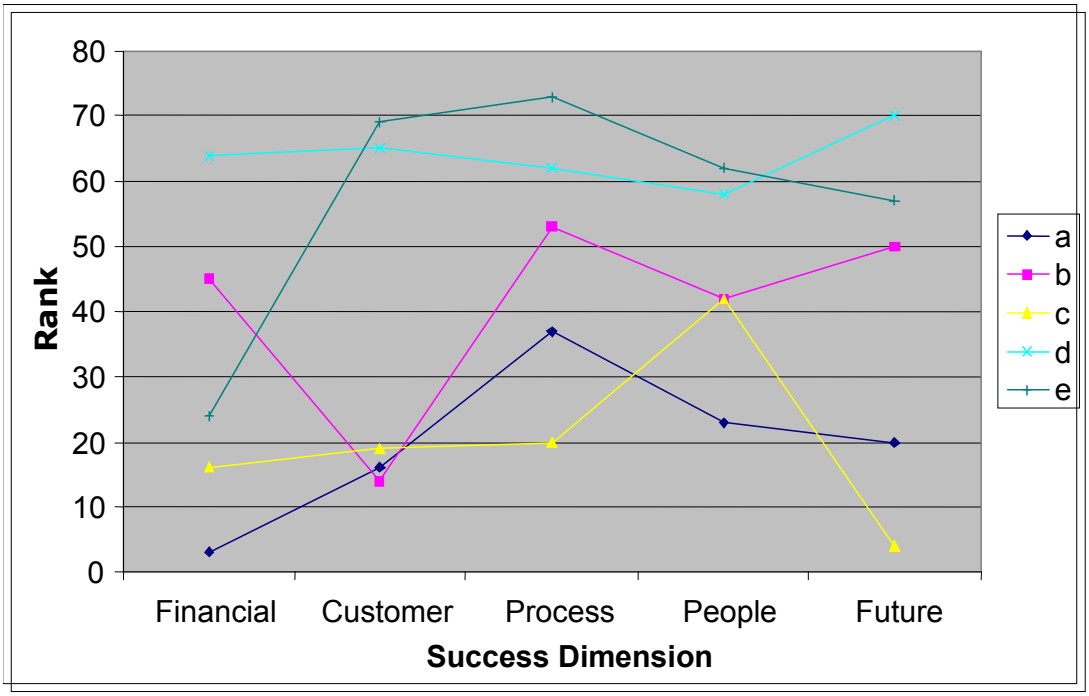


**Fig. 1. Corporate level success dimensions**

*Developed from: (17) Maltz, A.C., Shenhar, A.J., Reilly, R.R.: Beyond the Balanced Scorecard: Refining the Search for Organizational Success Measures. Long Range Plann. 36, 187–204 (2003)*

## 4. THE BUSINESS UNIT LEVEL

Organizational success at the business unit level rests upon the aggregation of results achieved by different projects and products. Typically businesses are measuring success in terms of gross sales, profit, return on investment and gross market share. Some of these measures may have longer time-horizons than others-for example, meeting backlog targets. While a few companies are using additional longer-term measures such as the percentage of sales from new products, a comprehensive framework of the business unit success is needed. Our studies [23,24] of business units in the high-tech industry found that business unit success measures could be based on the following five dimensions (see Table 3).

**Table 3. Business unit success measures**

| Success dimension | Specific typical measures |
|---|---|
| 1. Profitability | • Sales, profits<br>• Cash flow<br>• Margins |
| 2. Orders and Marketing | • Projected sales objectives<br>• Back log<br>• Market share |
| 3. People Development | • Developing technical skills<br>• Managerial skills<br>• Human resources utilization<br>• Administrative services |
| 4. New Opportunities | • Sales from new products<br>• New markets<br>• Customer satisfaction<br>• Customer loyalty |
| 5. Preparing for the Future | • New technology<br>• New product lines<br>• Infrastructure for the future |

*Developed from: (24) Dvir, D., Shenhar, A.: Measuring the success of technology-based strategic business units. Eng. Manag. J. 4, 33–38 (1992)*

## 4.1 Profitability

The first dimension addresses the issues of how well does the business unit meets their financial and profit objectives and do present sales generate enough cash to insure the smooth operation of the business? It reflects results of actions taken in the past that have generated recent sales. This dimension involves the traditional measures of sales and profits. However, the business should also ask, how its profit margins are doing relative to similar businesses in the industry and compared to its own profitability goals.

## 4.2 Orders and Marketing

This dimension involves the next step of success in the market. It includes measures indicating prospective revenues from existing orders scheduled for delivery in the near future. It addresses the question of how successful is the business in achieving sale objectives and in creating additional orders. Is there a continuous flow of orders and what is the current level of backlog? Of particular interest is the question how are these orders going to influence future cash requirements.

## 4.3 People Development

This dimension highlights the critical role of people in the business units' success. Measures such as the quality of professional development and management skills are essential to a successful operation. It may also include utilization of skills across projects, placement of people, growth potential, and quality of administrative processes. These are elements that take perhaps 2-3 years to develop but contribute to the business unit success for many years.

### 4.4 New Opportunities

This dimension is focused on a longer range. It measures outcomes that influence longer-return results since exploiting new opportunities may take time. It addresses the question of how successful is the organization in opening up new opportunities for new products and new services and new markets. What are the prospects of entering into these markets in the foreseeable future? This dimension also includes assessing customer satisfaction and loyalty. Are customers happy with the quality of the products and services of the business unit and are they willing to come back for additional purchases?

### 4.5 Preparing the Infrastructure for the Future

This very long-term dimension addresses the question of how well is the business prepared for future opportunities and changes. It reflects past and future investments that may determine the business unit's results in the years to come, and sometimes may even hurt business in the short-term. Had the business identified and made the necessary strategic decisions on future technologies and future types of products? Had it invested enough in developing skills required for future markets? Does it have enough long-term programs, whose goals are beyond two or three years from now; and is it working on next generations of technology and products which are focused on five, seven, or ten years away?

### 4.6 Specific Measures for Each Business

While most organizations are using the first and second measures (profits and backlog), only a few are formally looking at longer-term dimensions. Many companies are currently using frameworks such as the Balanced Scorecard and some pioneering companies such as Hewlett-Packard and 3M have instituted a longer-term perspective for many years. To focus their businesses on continuous innovation they are assessing, among other things, the percentage of sales from new products developed within the last few years (part of the fourth dimension-opening the window for new opportunities).

### 4.7 Using the Framework for Predicting Future Business Success

The multi-dimensional framework of business unit success was used in a study of 76 business units in the electronics and computer industry in Israel [23]. The results indicate that the success of a business unit may be divided into two parts. One encompassing the first two dimensions (profitability level and orders) and reflecting the short run economic success; while the other including the last two dimensions and reflecting the prospects for the future.

The difference among the four dimensions and how short-term success differs from long-term success is demonstrated in (Fig. 2). At the time of this study, we examined only four dimensions. It exhibits the performance achieved by five business units and their relative ranking among the group of all businesses studied along the four success dimensions. A high rank means high performance.

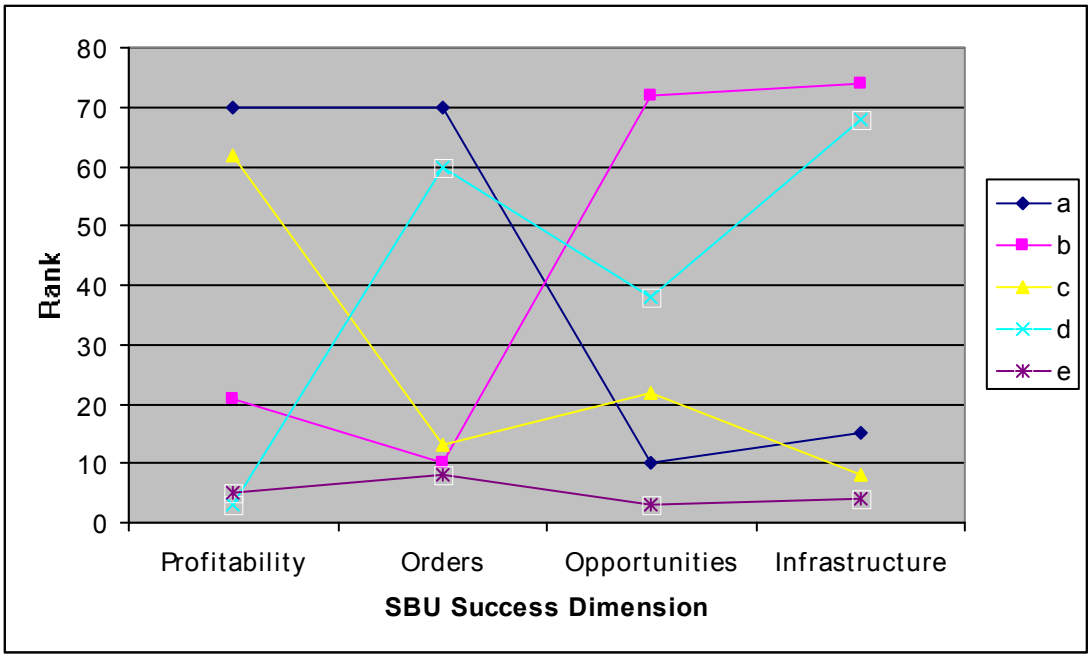


**Fig. 2. SBU level success dimensions**

*Developed from: (24) Dvir, D., Shenhar, A.: Measuring the success of technology-based strategic business units. Eng. Manag. J. 4, 33–38 (1992)*

Unit ***a*** was one of the best units in terms of short and very short-term success (measures include profitability, orders and marketing). However, it was one of the worst in terms of longer-term success such as preparing for the future. Obviously, such a situation requires immediate corrective action for preparing the unit for future challenges. Without such action, the situation might rapidly deteriorate, and then affect its short-term results as well. In fact, three years after the study was conducted, unit ***a*** went into severe financial problems and previous sales levels has significantly declined.

In comparison to unit ***a***, the position of unit ***b*** is quite strong regarding long-term measures. Its short-term measures, however, are rather poor. It is likely however, that due to its good technological infrastructure and its new product and market opportunities, that it will soon recover and present good performance, regarding profitability and orders as well. And in fact, three years later this unit proved itself as a very successful one.

Intermediate cases have also been observed. Unit ***c*** was ranked high in terms of profitability. Regarding other dimensions, however, its ranks were quite low. Although this unit has good profits at the moment, there are no orders to provide time for reorganizing and opening new opportunities. Furthermore, it seems that management has not taken the right steps to establish the technological and human infrastructure, nor has it taken the steps for getting new orders. Obviously, this unit is on its way to decline and so indeed happened later.

The data on unit ***d*** supports, as well, the predictability of our framework. Its profitability level is quite low, while all its longer-term scores are higher. As can be anticipated from the data exploiting the new opportunities, using a strong technological infrastructure might improve

the profitability situation. That is exactly the course that unit ***d*** has taken, and in fact, their profitability returned to an acceptable level.

The data on unit ***e*** presents probably the last moment before consolidation. Prior to the study, unit ***e*** reduced its workforce by 50% and during the study's course it had actually taken desperate actions which proved to be too little and too late.

## 5. THE PROJECT LEVEL

Projects are initiated for many purposes; e.g., establishing new business and manufacturing processes, develop new and upgrade existing products and to expand facilities. The ability to assess project success has always been difficult, depending on WHO and WHEN the questions are asked. Classical measures such as meeting time, function and budget are the so-called 'triple constraint, and are widely used. However a seemingly troubled project, with significant schedule delays and budget overruns, can develop into a very profitable venture. Consider, the construction of the Sydney Opera House. The cost of this project was almost ten times higher than planned, and it took three times longer than projected. However, it quickly became Sydney's most famous landmark, and no tourist wants to leave Australia without seeing it. Similarly, Microsoft's launch of its first Windows operating system suffered substantial delays and required a continuous flow of resources and additional people. However it is clear that years later, Windows has been a major cash-cow for Microsoft and is widely used in desktops globally.

Shenhar et al. [25] have suggested that projects in the future will be managed more and more as strategic endeavors, not just as operational activities. Projects should be focused on achieving business results and winning in the market place, and project management and teams will spend a great deal of their time and attention on activities and decisions that will improve business results in the long run. Projects, therefore, must be perceived as powerful, strategic weapons, which are initiated to create economic value and competitive advantage, and project managers must become the new strategic leaders, who must take-on total responsibility for project business results. In today's rapid changing world, there is no time to share this responsibility in the old way, where project managers were concerned with "getting the job done," while other managers were responsible for business aspects. One can no longer distinguish between project success and product success. It is all part of the same game and projects can no longer be seen as just operational tools for executing strategy, but rather the engines, and the drivers of strategy into new directions. Project success therefore must focus on all aspects, the short-term of meeting time and budget, but also the longer-term factors of business and future. Our studies on project success have resulted in the following framework of five dimensions [26].

### 5.1 Project Efficiency

Our first dimension is the short-term measure expressing the efficiency with which the project has been managed. It specifically measures whether the project has met its 'triple constraint' of time, budget and function. However, does this imply that the product will be a commercial success? With ever increasing competition and shorter product life cycles, time to market becomes a critical competitive component.

**Table 4. Typical project success measures**

| Success dimension | Specific typical measures |
|---|---|
| 1. Project Efficiency | • Meeting schedule goal<br>• Meeting financial goal |
| 2. Team Leadership | • Project Vision<br>• Team motivation<br>• Team morale<br>• Collaboration<br>• Trust |
| 3. Impact on the Customer | • Meeting functional performance<br>• Fulfilling customer needs<br>• The customer is using the product<br>• Customer satisfaction<br>• Customer loyalty |
| 4. Business and Direct Success | • Commercial success<br>• Sales and profits<br>• Project net present value<br>• Market share<br>• Business improvement |
| 5. Preparing for the Future | • Creating a new market<br>• Creating a new product line<br>• Developing a new technology<br>• Building new infrastructure |

*Developed from (28) Shenhar, A.J., Dvir, D., Levy, O., Maltz, A.C.: Project Success: A Multidimensionsal Strategic Concept. Long Range Plann. 34, 699–725 (2001)*

Therefore, some organizations may find it beneficial to consider additional measures of efficiency. For example, the efficiency and yield of production ramp, the number of engineering changes before final design freeze, and the cost of materials and tooling. However, one must realize that all of these measures only relate to successful implementation of project execution and do not necessarily imply product success.

## 5.2 Team Leadership

This is the project "people management" dimension; it represents the investment and skills of the project manager in leading, organizing, and motivating the team members. It also represents the team's "spirit"–the internal culture that was nurtured among team members, and the excitement and energy that often characterizes great projects. Our research [27] suggests that project spirit is enhanced by creating a vision, and cultivating the norms of behavior, values, the team internal interaction and mutual support and the social bonding of team members.

Team leadership has been widely studied in recent years. For large capital projects, project leadership was one of the strong predictors of success [20]. A few studies have indicated a mixed result on project performance. For example, Belout and Gauvreau [21] while finding a link between the personnel factor and project success (non-significant) they have indicated that this link does exist according to life cycle stage. Project success is also effected by the industry, project complexity and the age and nationality of the project manager [22]. Turner and Muller [28] provided a wide-ranging literature review on leadership style as a success factor on project success.

## 5.3 Impact on the Customer

Understanding the "real" needs of the customer is extremely important and reflects the basic notion of success. This dimension addresses the importance to the customers' requirements, and to meeting their needs. This dimension also includes the level of customer satisfaction, the extent to which the customer is using the product, and whether the customer is willing to come back for another project or for the next generation of the product. In a study of the relative importance of success dimensions, Previous research [27] has found that project managers perceive this dimension far more important than the other success dimensions.

## 5.4 Businesses and Direct Success

This dimension addresses the direct impact the project may have on the performing organization. Were the sales, income, and profits as expected, did it help increase business results and gain market share?

This dimension may also apply to non-profit organizations and internal projects. For example, organizations may need to assess the success of their re-engineering projects, or the developing of new manufacturing processes. It will include measures of cycle time, yield, and quality of the process; all of them will assess the direct impact that the project had on the organization.

## 5.5 Preparing for the Future

The last dimension addresses the issue of helping prepare the organizational and technological infrastructure for the future. Did the project develop new technologies or markets or other innovations? Has our organization developed new skills that will be critical for future endeavors?

Can a project really be successful if the Product is a failure? It can, if the failed project served as a foundation for another project. Consider Apple's 'Newton', by all accounts a commercial disaster. But this effort led Apple to the development of the iPad, which is incredibly successful.

## 5.6 Project Success over Time

Project success should be considered as a dynamic concept, with different dimensions playing a role at different times and with varying degrees of importance over time. Project success also varies with project type [25]; depending on the level of technological uncertainty at the time of the project's inception. The project efficiency (first) dimension can be assessed during project execution and right after project completion. The third dimension (Impact on the Customer) is assessed after the customer has used the project's product. Business success can be assessed after reaching a significant level of sales; this may take several years, depending on the industry. Typically several years may pass before the fifth (Future) dimension can be judged. The people dimension manifests itself across the project lifecycle and even after a project is completed. Project team members are typically assigned to new projects and continue to exploit their experience and knowledge gained during previous projects.

## 6. THE CRITICAL ROLE OF THE HUMAN CAPITAL

There is no question that the human element has a critical role in the success and competitiveness of the modern organization. This becomes even more important with the acceleration of knowledge creation and the increased reliance of companies on knowledge management, knowledge assets and intellectual property. Many authors have emphasized the importance of the human element to the success of today's organization. For example, Ittner and Larcker [29] view human resource management practices as one of the key elements of process based performance improvements. They suggest that a firm's management and its employees can affect its financial performance as well as provide a valuable source of competitive advantage [30,31]. Project-oriented organizations have unique human resource management issues [32], they are better at providing organizations with competent people, but do not do as well as caring for their employees; many of these companies realizing the critical need for these people are providing career development opportunities to improve morale. Firms have embraced the notion of human capital as a competitive advantage that enhances higher performance [33]. Similarly, Edvinsson and Malone [10] claim that "without a successful human dimension to a company, none of the rest of the value creations activities will work". Furthermore, organizations in the Silicon Valley have coined the term "wetware" representing the human input into economic activities; this human activity can never be "owned", only "rented," and it is critical to any firms' success [34].

In our study of success dimensions across different organizational levels, we have witnessed the importance of human capital again and again. Almost every manager that we interviewed has stressed the importance of human resources to the success of his or her company. Statements that we heard included the following quotes [35]: a chairman of an engineering services firm asked: "Is staff morale higher than last period? This is critical to our success." A defense contractor president suggested that, "The morale of employees is very important. Unhappy employees will affect product quality, customer satisfaction and sales and profitability." And a general manager of a telecommunication equipment manufacturer said, "Employee skills, talent, and experience are the primary differentiator for high-tech firms today." When we looked at specific dimensions in our research at the corporate level, we found that 'retention of top employees' was the second most frequently selected measure among all measures (second only to sales). It was rated as important or very important by 76.7% of all respondents.

Yet, when it comes to actual measurements, only a few organizations were found to be using a formal explicit framework to assess the company's success in treating its employees, its employee morale and satisfaction, or their skills and productivity. The conclusion is clear: adding the assessment of the human element as an indicator for performance is critical to short-term success, but perhaps even more important to long-term success, and alternatively may serve as a pre-warning for trouble. For example, if a growing number of people are leaving the organization and the turnover rate is increasing, clearly, something is wrong.

Integrating the results of our three studies, we concluded, that the human element could indeed be measured. Furthermore, while different people issues should be looked-at different organizational levels, there is a common element across all organizational levels that should be measured in order to guarantee sustainable success in the long run. Starting from the lowest level, the human element at the project or team level should be focused on team leadership, team morale, and team spirit. An individual project is a temporary

organization that only exists as long as the work toward the project goal continues [36]. When the goal has been reached, the project ends and the team members are assigned to other projects or commitments. Thus the short-lived nature of projects suggests that dealing with people on the project should be focused on creating the immediate motivation and spirit that is needed to get the job done. However, great project teams are characterized by high team spirit, extensive morale, and mutual support among team members. Leaders of great projects are distinguished by their ability to make the team function as one, to support team members in their personal issues, and create a unity and community among team members so that they will feel that they are part of a unique excellent team. Typical measures at the project level may include how people feel about being part of this team, how proud they are to be on the team, how much they are supported by their peers, and how much are they challenged by the goals and tasks of their project.

At the business unit level the people issues are moving to a higher level. Business units are more stable, and the people issues may have a longer term perspective. Therefore, success in the management of the human capital will be determined by how well does the organization deal with their professional development, work assignments, placements in positions, and perhaps the development of management skills.

Finally, at the corporate level, the human capital management should be focused on the longer-term issues. One of the most important issues is the retention of top employees and professional workers. Another one would be the organizational culture and how well it supports the creativity, the innovation, or the quality of the customer focus that the organization is trying to achieve. And yet another issue may be the quality of developing leadership skills and growing people to prepare better for their next assignments on a long-term basis. One may also include tracking company statistics about the average age of employees, the average tenure of employees with the company, investment in training, and the average training days per year per employee [37] .

## 7. PREPARING FOR THE FUTURE

Just as the human issue extends as important throughout the spectrum of organizational levels, preparing for the future appears a common theme in all levels. This measure emerged from previous frameworks, which dealt with learning or investments in R&D. Naturally, this is the longest-term dimension, and success in preparing for the future is perhaps the most important dimension for sustainable on-going success. Yet short-term pressures are often preventing organizations from investing in the future or even assessing the way they are operating for achieving sustainable success.

Our multi-level studies have shown that this issue is in fact on many managers' minds, yet when implementing a formal framework of success, only a few organizations made this dimension part of their assessments structure. Here too, we found different specific measures to be relevant for the dimension of preparing for the future. Once again, starting with the project level, preparing for the future means that the project is being managed to achieve more than just immediate business and profit related goals. In many projects, an effort is made to build new technologies [38] or to prepare infrastructures and abilities that would be used in the future for other projects and by other product lines. Typical measures indeed include developing new technologies, creating new markets and developing new organizational capabilities.

At the business unit level, preparing for the future means creating next generation products, investment in new technologies, and creating infrastructure and methods for future product lines. At this level, one looks at the ability of the business to combine the efforts across projects into a coherent view of the future where the business is focusing on strategic goals and imperatives that will shape the business and its environment in the long run.

Finally once again, at the corporate level, what is important for the future is the ability of the company to create leadership in the industry, to define the foresight for the future of the industry, and to invest in creating new businesses while identifying opportunities that are outside of the territory of existing businesses. The corporation should also assess its total investment in R&D, in creating partnerships with potential allied companies, and its investment in infrastructure such as IT, global markets, and international outreach.

## 8. IMPLICATIONS AND CONCLUSION

The need for a comprehensive view of performance management has been widely discussed in the popular and scholastic press. The capital markets emphasize quarterly earnings reporting and significantly punish those companies not meeting earnings expectations. As a result companies often practice financial engineering; and much of this comes at the expense of investing for the future. Consequently, it is crucial that success measures provide organizations with tools to build their future. That entails measures that are indicative of investing in people issues as well as in building long-term resources, facilities, and capabilities, to adapt to the fast pace of today's changing environments. We believe it is also critical that any prescription for performance measurements would be simple, dynamic, and flexible over time, foster improvement, and be linked to the organization's strategy, goals and objectives.

In conclusion, perhaps the need for a new dynamic framework can be best described by two observations from the recent corporate literature. We defined a new view of corporate strategy. Their premise is that competition for the future will be to create and dominate emerging opportunities–to stake out new competitive space. Companies that are too focused on today's issues and not preparing for the future will simply not be competitive. Also, Collins and Porras [39] emphasize that one of the fundamental attributes of organizations that have endured for years are the "envisioned future". They specifically define this term as setting a "big hairy audacious goal" that truly stretch an organization's resolve and resources but has the potential to shape the future. This may take the firm from ten to thirty years to achieve–clearly a long period of corporate life, and clearly indicates the need for long-term success assessment methods.

The "Dynamic Multidimensional Success Model" (DMDS) provides another step towards a practical framework to the domain of organizational performance measures. It looks at the organization as a "whole' from the project level up through to the corporate level and gives managers a practical starting point for effectiveness measures over multiple timeframes. By adding the Human Capital and Preparing the Future dimensions to their success scorecards, our hope is that this framework may help companies to constantly examine themselves and improve the chances for sustainable and stable success.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

## REFERENCES


1. Hayes R, Abernathy W. Managing our way to economic decline. Harv. Bus. Rev. 1980;58:67–77.
2. Shenhar AJ, Dvir D. Long term success dimensions in technology-based organizations. (chapter 32), in Handbook of Technology Management., New York: McGraw Hill; 1996.
3. Hamel G, Prahalad CK. Competing for the future. Boston: Harvard Business School Press; 1994.
4. Maltz AC, Shenhar AJ, Dvir D, Poli M. Integrating success scorecards across corporate organizational levels. Open Bus. J. 2012;5:8–19.
5. Chavan M. The balanced scorecard: A new challenge. Journal of Management Development. 2009;28:393–406.
6. Kaplan RS, Norton DP. The balanced scorecard-measures that drive performance. Harv. Bus. Rev. 1992;70:71–79,.
7. Kaplan RS, Norton DP. The Strategy-Focused Organization: How Balanced Scorecard Companies Thrive in the New Business Environment. Boston, MA.: Harvard Business School Press; 2000.
8. Atkinson AA, Waterhouse JH, Wells RB. A stakeholder approach to strategic performance measurement. Sloan Manage. Rev. 1997;25–37.
9. Smith M. Measuring organizational effectiveness. Manag. Accounting. 1998;34–36,
10. Edvinsson L, Malone MS. Intellectual capital. New York: HarperCollins; 1997.
11. Wu, Lin, Tsai. Analysing alternatives in financial services for wealth management banks: the analytic network process and the balanced scorecard approach. IMAJ. Manag. Math. 2009;20:303.
12. Beard DF. Successful applications of the balanced scorecard in higher education. Journal of Education for Business. 2009;84:275–282.
13. Naranjo-Gil D. Strategic performance in hospitals: The use of the balanced scorecard by nurse managers. Health Care Manage. Rev. 2009;34:161.
14. Strecker L. Balanced scorecard at Best Foods. In Presented at the SATM Roundtable; 1999.
15. GP, Rogers H. Measuring international product development performance, in EIBA Conference; 2002. Athens, Gr.
16. Brancato CK. New corporate performance measures, in The Conference Board; 1995.
17. Maltz AC, Shenhar AJ, Reilly RR. Beyond the Balanced Scorecard: Refining the Search for Organizational Success Measures. Long Range Plann. 2003;36:187–204.
18. Buller PF, McEvoy GM. Strategy, human resource management and performance: Sharpening line of sight. Human Resource Management Review. 2012;22:43–56.
19. Turner JR, Müller R. The project manager's leadership style as a success factor on projects: A literature review. Proj. Manag. J. 2005;36:49.
20. Scott-Young C, Samson D. Project success and project team management: Evidence from capital projects in the process industries. J. Oper. Manag. 2008;26.
21. Belout A, Gauvreau C. Factors influencing project success: The impact of human resource management. Int. J. Proj. Manag. 2004;22:1.
22. Müller R, Turner R. The influence of project managers on project success criteria and project success by type of project. European Management Journal. 2007;25:298–309.
23. Dvir D, Shenhar A. Measuring the success of technology-based strategic business units. Eng. Manag. J. 1992;4:33–38,
24. Dvir D, Segev E, Shenhar A. Technology's varying impact on the success of strategic business units within the Miles and Snow typology. Strateg. Manag. J. 1993;14.

25. Shenhar AJ, Poli M, Lechler T. A new framework for strategic project management, in Management of Technology VIII, T. Khalil, Ed. Miami, FL: University of Miami; 2000.
26. Shenhar AJ, Levy O, Dvir D. Mapping the dimensions of project success. Proj. Manag. Journal. 1997;28:5–13,.
27. Shenhar AJ, Dvir D, Levy O, Maltz AC. Project success: A multidimensionsal strategic concept. Long Range Plann. 2001;34:699–725.
28. Turner JR, Müller R. The project manager's leadership style as a success factor on projects: A literature review. Proj. Manag. J. 2005;36:49–61. 13p. 1 Diagram.
29. Ittner CD, Larcker DF. The performance effects of process management techniques. Manage. Sci. 1997;43:522–534.
30. Delery JE, Doty DH. Modes of theorizing in strategic human resource management: Tests of universalistic, contingency, and configurational performance predictions. Acad. Manag. J. 1996;39:802–835,.
31. Huselid MA. The impact of human resource management practices on turnover, productivity, and corporate financial performance. Acad. Manag. J. 1995;38:635–672.
32. Turner R, Huemann M, Keegan A. Human resource management in the project-oriented organization: Employee well-being and ethical treatment. Int. J. Proj. Manag. 2008;26:577.
33. Marimuthu Arokiasamy M, L, Ismail M. Human capital development and its impact on firm performance: Evidence from developmental economics. J. Int. Soc. Res. 2009;2(8):265–272.
34. Lessard D. Bank of America roundtable on the soft revolution: Achieving growth by managing intangibles. J. Appl. Corp. Financ. 1998;11:8–27.
35. Maltz AC. Defining and measuring organizational success: A multidimensional framework. Stevens Institute of Technology, Hoboken, NJ; 2000.
36. PMI. Project management book of knowledge (pmbok guide). Proj. Manag. Inst. 2012;30.
37. Van Otterlo RCH. Does human resource management help a company ' s financial operating result？ 2013;2013(December):273–282.
38. Isaacson W.Steve Jobs, vol. First Edit. New York: Simon & Schuster. 2011;656.
39. Collins JC, Porras JI. Built to last. New York: Harper Collins; 1994.

# APPENDIX

## APPENDIX A- Notes on Research Methodology

As described in the text, we chose to perform a two-stage study, which involved a combination of qualitative and quantitative methods and two data sets. The first stage involved a case study research on 15 projects, and the second a statistical analysis study on 127 projects. The fifteen case study projects were part of the larger sample of 127 projects, which seem to add only an insignificant bias to our findings.

All projects we studied were either completed within the recent year, or they were in their last quarter before completion. Data collection was performed in Israel, in the mid 1990s, in firms operating in the military, or the commercial market. The projects studied were in a wide variety of industries (e.g., electronics, aerospace, computers, chemical), had significant range in budget (from $40,000 to $2.5B), project duration (from 3 months to 12 years), markets served, and project purpose.

Caution should be exercised in generalizing the results of this study, since the projects studied here were not randomly selected and may not be representative of all projects in general, or in other parts of the world. However, Israeli industry is closely coupled to Western culture, either in Europe or the US; many of the organizations involved in our study are subsidiaries or partners of American companies, and there is no reason to suspect that the study was biased in any significant way.

Data collection for the first part (case study) was multi-faceted, and included in-depth interviews, which were conducted by teams of two or three, and involved at least three people from each project. In addition to the project managers, we interviewed members of the project management team, functional team members that were involved in the project, project managers' supervisors, and customer representatives. To strengthen our research validity, and as is often required by qualitative studies, we insisted that investigators interact with their subjects on their own turf, namely at the project site.

Interviews involved open questions on the project mission and objectives, the motivation and the expectations from the project of the different parties involved: the contractor, customer, and user. Data were also obtained on success of the project, as perceived by the different parties, and as compared to their initial expectations. Finally, we obtained data on specific goals and achievements such as meeting time and budget goals, meeting technical and functional requirements, fulfilling customer needs, and achieving various business-related results.

The qualitative case data of this study were processed through a method of cross-case comparative analysis, and as required by this method, it was highly iterative, with continuous comparison of data and theory. This method as described by Eisenhardt (p. 533) “forces investigators to look beyond initial impressions and see evidence through multiple lenses.”

During the case study part of our study, and based on the experience gained in previous studies, we prepared a list of thirteen specific measures to account for the interests of various parties (see Table 3). This list formed the basis for the structured questionnaire, which was used during the quantitative part. During this phase, respondents were asked to rate the importance they place to each of these measures on a seven-point assessment

scale, from “very low” to “very high.” They were also asked to use a seven-point scale to rate the degree of success they perceived in each of these thirteen measures, as well as in a fourteenth measure, which involved an assessment of the project overall success.

Data analysis in this part, involved calculating the descriptive statistics and Pearson Correlation coefficients between the fourteen measures we studied. We also performed a factor analysis on these measures to identify whether they can be clustered as groups of typical measures, which are strongly related to each other, and thus can be described as separate success dimensions. The statistics can be found in our other paper "Project Success: A Multidimensional Strategic Concept" by Aaron J. Shenhar, Dov Dvir, Ofer Levy, and Alan C. Maltz.



*Peer-review history:*
*The peer review history for this paper can be accessed here:*
*http://www.sciencedomain.org/review-history.php?iid=535&id=20&aid=4849*