A discussion of the suitability of Six Sigma techniques in non-profit arts and culture-oriented organisations

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Non-profit management, arts management, non-profit sector, problem-solving

Abstract
Six Sigma is a comprehensive and systematic strategy for achieving and sustaining quality and process improvement. Businesses have utilised it to reduce costs and improve productivity in their processes, improve customer satisfaction, develop new defect-free products and services that delight their customers, foster market share growth, improve customer retention, reduce cycle time, and facilitate culture change within their organisations (Pande, Neuman & Cavanagh 2000; Mutize 2003). In this paper, I explain the principles of the Six Sigma approach to quality and process improvement and describe how the use of this management tool – commonly used in manufacturing and service-providing organisations – can help administrators of arts-and culture-oriented organisations to address the current economic challenges facing their organisations.

Biography
Introduction

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The current challenge

Although arts and culture-oriented organisations are present in all segments of the economy, we find most occur within the non-profit sector (O’Neil 2002). The scope of these organisations includes art galleries and museums, educational institutions, non-profit performing venues, symphony orchestras, chamber music ensembles, and opera, theatre, and dance companies. In almost all cases, non-profit arts- and culture-oriented organisations provide services rather than manufactured products to their customers.

The United States Internal Revenue Service defines non-profit arts, culture, and humanities organisations as “private non-profit organisations whose primary purpose is to promote appreciation for and enjoyment and understanding of the visual, performing, folk, and media arts...”. The majority of these groups is small, with fewer than ten employees and budgets of less than $500,000 (O’Neil 2002). The non-profit arts and culture industry in the United States (US) generates $166.2 billion (US) in economic activity — $63.1 billion in spending by organisations and an additional $103.1 billion in event-related spending by audiences (Non-profit Almanac 2007). In 2005, it provided 5.7 million full-time equivalent jobs and $12.6 billion dollars in federal tax revenues. The calculations include artists’ salaries, the money arts groups spend on services and supplies, and audience spending on hotels, meals, and parking (Arts and Economic Prosperity III 2007). These figures include more than 1,500 professional theatres, 1,200 symphony orchestras, 600 youth orchestras, and 120 opera companies operating in the US (Cowen 2007). They also include approximately 1,800 music educational institutions (College Music Society 2003) and 300 art schools in the US (Peterson’s 2006). Clearly, these figures demonstrate that there is a large potential audience for the techniques I describe in this paper.

Threats to funding

Many believe that it should not be the government’s responsibility to support the arts, or that governments should reduce arts funding in order to weed out inefficient organisations (Ott 2001). Critics argue that non-profit arts- and culture-oriented organisations should compete directly with for-profit organisations and that, unlike some acceptable policy domains such as prisons, defense, and infrastructure, the area of cultural policy cannot be justified as an essential or unavoidable governmental responsibility. Critics question whether the purported cultural significance of the arts is sufficient reason to justify continued expenditures while other sectors are expected to prove their economic benefits and public good (Craik 2005). Thus, in competing for financial support, the arts community is also expected to focus on tangible results that have broad political backing, such as economic development and improved educational...
Defending arts on economic terms is not a universally accepted approach. A 2004 Rand Corporation study that questioned this strategy found that most research efforts to tie arts to economic growth or to improvements in educational achievement fail to prove cause-and-effect and obscure more basic reasons to support arts. There is a lack of clear empirical evidence to demonstrate that the benefits achieved through the arts will always be greater than those achieved by putting the same money and priorities into other investments, such as sports stadiums, shopping malls, or job development (McCarthy et al. 2004). If we cannot justify expenditures for non-profit arts- and culture-oriented organisations on an economic basis, then we need to defend them for their intrinsic value. As described by James Canales, “The importance of the arts extends well beyond economics and education. The arts expand our horizons, unleash creativity and build social bonds. During this period of unsettling change, the arts can provide us with pleasure and comfort, while also challenging us to see the world in new ways” (Canales 2009, p.13).

In defending continued support for the arts, non-profit administrators must be able to demonstrate that their organisations are achieving their missions with utmost efficiency and effectiveness. Brooks (2006) suggests that many standard measures used to gauge economic performance, such as Return on Investment (ROI), do not accurately reflect the mission of such organisations and that these organisations pursue a social mission that does not necessarily enhance their financial bottom line. Baumol and Bowen (1966) argue that the arts will always require financial support from sources other than ticket sales in order to survive. Baumol (1967) observes that in a progressive sector such as manufacturing, wage demands increase as productivity increases. However, in a nonprogressive sector such as the performing arts, the productivity level remains relatively constant, and any wage increase results in a disproportionate increase in labour costs. While various authors (Throsby 1994; Felton 1994; Tiongson 1997) discuss the merits of the argument that a so-called cost disease exists, we should consider that Baumol and Bowen (1966) refer only to the primary artistic activities of a performing arts organisation rather than to the supporting activities in which we reasonably can expect improvements in productivity. This latter category is perhaps where managers should focus their efforts for improvement.

Today, administrators of non-profit arts- and culture-oriented organisations must be skilled managers familiar not only with the arts, but also with sophisticated management techniques. They must be competent in fundraising, grant writing, human resource management, administration, and logistics. They face the dual challenges of coping with rising expenditures for artists, art works, production, and educational projects and the uncertainties of forecasting and acquiring the revenue required to support their programs (Cowen 2007). For many, their primary focus has shifted from artistic concerns to the overall quality of the organisation’s administration and management (Do 1993). Non-profit arts- and culture-oriented organisation administrators may improve effectiveness and efficiency in their organisations’ supporting activities by adopting managerial tools that have helped organisations in the manufacturing, healthcare, and service sectors. The literature describes several instances in which these techniques have been applied in non-profit arts-and culture-oriented organisations. These include use of the balanced scorecard and performance metrics to achieve operational and strategic alignment (Weinstein & Bukovinsky 2009), use of Baldrige assessment techniques for strategic planning and assessment (Weinstein, Williams & Paul 2007), application of manufacturing cost of quality elements (Weisinger, Daily & Holman 2006) and management accounting systems (Turbide & Hoskin 1999), application of benchmarks and outcome performance indicators (Lampkin et al. 2006, http://www.whatworks.org), and evaluation of social objectives (Gilhespy 2001), museum efficiency (Paulus 1995; 2003), and audience response (Soren 2000). Managers of arts- and culture-oriented organisations appear to place little emphasis on the application of quality management and process improvement techniques despite the potential benefits (Weisinger, Daily & Holman 2006). Several reasons may exist for their hesitance to adopt modern management practices. First,
senior employees of non-profit arts- and culture-oriented organisations have typically received training in the academic discipline of their organisation rather than in management skills. Key personnel have primarily been experts in the artistic work that was at the core of their organisation's mission and only secondarily as managers (DiMaggio 1987). Second, because of their limited resources, managers often have delayed or abandoned initiatives that require extensive investment and ongoing commitment (Cray, Inglis & Freeman 2007). Third, many managers of arts- and culture-oriented organisations have avoided the issues of accountability, and measurement, of outcomes and value which their stakeholders had not required. Many in the field also argue that much of their work is not appropriate for such analyses (Weil 2002).

What is Six Sigma?

Six Sigma is a business improvement strategy used to improve profitability, to eliminate waste, to reduce costs associated with poor quality, and to improve the effectiveness and efficiency of operations. It utilises a well-defined methodology and an extensive set of quality and statistical tools to pinpoint and eliminate sources of errors. It is an information-driven methodology for reducing waste, increasing customer satisfaction, and improving processes, with a focus on financially measurable results (Raisinghani et al. 2005; Antony & Bahuelles 2001; Harry & Schroeder 2000). Six Sigma is based on a five-step process referred to as DMAIC, the acronym for define, measure, analyse, improve, and control. In the define stage, a representative team of employees utilises a systematic process to select an appropriate issue to address. The team identifies the desired process output characteristics, the potential business impact, and the goal of the project. In the measure stage, the team develops a flow chart to describe the current process and begins to collect data to establish a baseline for its current performance and capability. In the analysis stage, the team identifies potential root causes of problems with its process and uses statistical analysis to verify those root causes of these problems. In the improve stage, the team attempts to eliminate the verified root causes for these problems and demonstrates by way of further analysis that it has resolved the problem or that there has been measurable improvement in the process. In the final stage, control, the team develops and implements a plan to ensure that its improvements will be sustained by way of training, standard operating procedures, and statistical process control (Pande, Neuman & Cavanagh 2000; Mutize 2003; Brewer & Eighme 2005).

The implementation sequence

All of the steps necessary to implement Six Sigma within an organisation could not be described in a single article. However, the reader might consider the following summary of key requirements for success in a small or medium sized organisation adopted from Burton and Sams (2005) as a sequence of necessary implementation steps.

First, management must recognise and communicate the need for improvement in the organisation. It must provide leadership commitment and support in order to focus the organisation on making necessary changes. Second, management must develop a Six Sigma strategy and determine how it will be used to improve the organisation. Management must create a deployment plan and effectively communicate that deployment plan to all employees. It must link its Six Sigma efforts to the business plan by establishing a formal process for prioritising potential projects. Third, management must make the appropriate investment in resources for training and participation. Fourth, management should implement a formal management structure – for example, through a steering committee – to ensure effective deployment. It also should establish a formal process to monitor the progress of each project with a structured project closeout process. Finally, management should work to establish and support a culture characterised by employee involvement and empowerment.
An organisation implementing Six Sigma should clearly identify its customers and their requirements. It can categorise its customers as internal – people or entities within the organisation that use the organisation’s products and services, or as external – people or entities outside the organisation that use the organisation’s products and services. Direct external customers are the entities or people outside the organisation that receive the products and services the organisation produces. Indirect external customers, or stakeholders, are those outside the organisation who have some kind of stake in the work the organisation does but who are not the primary reason for its existence. Customers of a non-profit arts- and culture-oriented organisation can be individuals, groups, other non-profit arts- and culture-oriented organisations, or organisations that are not arts- or culture-oriented. An organisation can serve its customers at single or multiple sites, through face-to-face interaction, or electronically through recorded media or the internet.

For example, Culture Works (http://www.cultureworks.org) is the primary arts funding and service agency for the Greater Dayton (Ohio) region. Its mission is to provide funds and services to strengthen arts and culture in the Miami Valley. Among its internal customers are the large number of volunteers who enable the organisation to function, and the board of directors that provides professional guidance and support to the administrative staff. Its direct external customers include the region’s seven largest performing arts and arts education organisations as well as numerous smaller groups and individuals that receive financial and professional support. Culture Works indirect customers (stakeholders) include members of the community who benefit from the organisation’s support of the region’s cultural resources. Patrons can communicate with Culture Works either face-to-face during one of its many sponsored events or electronically through its internet website.

An organisation should have a systematic process for selecting an improvement project. As part of that process, the organisation needs to train its employees participating in the Six Sigma initiative to prioritise quality related issues and identify opportunities for quality improvement and project selection. Projects should be linked to the organisation’s business strategy, to its customers’ and suppliers’ requirements, and to the organisation’s current needs, capabilities, and objectives. We can group the generic list of implementation criteria into three categories. First are business benefits criteria. For every potential project, the quality improvement team should evaluate the organisation’s external customer requirements, business strategy, competitive position, and core competencies; the issue’s impact on financial issues such as cost reduction, improved efficiency, increased sales, and market share gains; the issue’s urgency and the lead time available to address it; and whether the issue is getting bigger or smaller. Second are the feasibility criteria. The team should consider what resources will be required, whether the necessary expertise is available, the difficulty of implementing a solution, the likelihood for success, and the ‘buy-in’ from key groups within the organisation. Third are the organisational impact criteria. The team should consider what new knowledge it might gain about the organisation’s business, customers, and/or processes, and how the project may help to eliminate barriers between groups in the organisation (Pande, Neuman & Cavanagh 2000).

Critical success factors for a Six Sigma program

The most important factor for a successful implementation of Six Sigma is management support and commitment. Any successful initiative such as Six Sigma requires top management involvement and the provision of appropriate resources and training. Without these, the true importance of the initiative will be in doubt.
The successful implementation of a quality initiative often requires a cultural change within the organisation to ensure that its values coincide with those underlying the quality philosophy (Deming 1986; Helsten & Klefsjo 2000; Lagrosen 2003). The organisation must create a working culture in which employees are able to effectively utilise process improvement practices (Huq 2006). The organisation may wish to implement mechanisms to increase employee motivation, such as incentive-based compensation and appraisal indices that foster cross-functional team performance and collaborative decision-making (Oliver 1996; Schuster & Zingheim 1992). The organisation can also facilitate implementation by effectively communicating the Six Sigma process, how it relates to each individual’s job, and its potential benefits. Management and employees in an organisation practicing Six Sigma should receive training in the DMAIC methodology, in basic statistical techniques and communication skills, and in identifying, executing, and managing Six Sigma projects. Often an organisation will initially embark on short-term improvement projects to maintain participant interest. The success of these initiatives will encourage employee cooperation and ensure future management support for the implementation process.

Application of Six Sigma process to service organisations

Although the Six Sigma process initially was developed and implemented within the manufacturing sector, today organisations in all sectors use these techniques. We can find successful applications in service-providing organisations in education, banking, accounting, finance, transportation, and healthcare (Antony 2006; Wyper & Harrison 2000; Brewer & Eighme 2005). The service sector represents a diverse and complex range of organisations that is characterized by the inseparability of production and consumption, intangibility of services, perishability of services, and heterogeneity of services (Ghobadian 1994).

The Six Sigma process is appropriate for the service environment for several reasons. First, all work – whether in a service or manufacturing environment – occurs through a system of interconnected processes. Within any sector, highly customised, mass-customised, and standard processes exist, with each category providing a different opportunity for applying Six Sigma techniques to study and improve its processes. Second, all processes exhibit variability that can cause a service to fail to meet customers’ needs and expectations. Six Sigma provides the tools for understanding the sources of variability and developing effective strategies to reduce or eliminate it. Third, all processes create data that explain variability. Six Sigma uses rigorous data collection and statistical analysis to pinpoint sources of quality problems and determine how to eliminate them (Harry & Schroeder 2000; Hoerl & Snee 2002; Antony 2006). Last, research shows that service processes perform at an average defect rate of 3.5 sigma, or 23,000 faults per million actions (Yilmaz & Chatterjee 2000). This rate would be considered unacceptable in most manufacturing environments; accordingly, it underscores the need for the application of these techniques to improve service sector processes.

A service-providing organisation faces certain distinct challenges to Six Sigma implementation. For example, problems with service processes often may be difficult to observe. The product of a service is not physically visible as is the case with a defective product from a manufacturing process. An unsatisfied patron may simply chose not to return without notifying anyone from the organisation that a problem has occurred. There also may be difficulties in assigning accountability for the failure of a service to meet customer expectations. Is the problem process-related, a lack of employee training, or some other cause?

The application of Six Sigma techniques to service activities may require a significant effort since its execution often depends more upon people than systems and
processes. It may be difficult to schedule the service down time required to make the necessary changes. Also, the evolution of service workflow and procedures often occurs with less deliberation than with manufacturing. Many service processes continuously evolve without formal procedural changes or serious deliberation with resulting degradation in service quality. The nature of service processes often makes them more difficult to measure. Automatic data collection, which occurs frequently in manufacturing, is seldom available for service operations. As a result, data and facts necessary for analysis are often narrowly focused, anecdotal, and/or subjective (Pande, Neuman and Cavanagh 2000; Ghobadian 1994).

The challenges of applying Six Sigma in non-profit arts- and culture-oriented organisations

By their nature, non-profit arts- or culture-oriented organisations may face distinct challenges in applying the five-step DMAIC model. One issue affecting implementation is the size of the organisation. As stated earlier, most non-profit arts- and culture-oriented organisations are small to medium in size. While the Six Sigma process has been promoted primarily based upon its successful implementations by large firms such as Motorola, General Electric, and American Express, it can be equally beneficial to smaller organisations. However, implementation requires a different deployment model that considers the limited resources available to these organisations.

For example, it is not necessary in smaller organisations to train every employee to use the wide range of statistical and non-statistical tools available for analysis. Employees also tend to have a broader range of responsibilities so it may not be possible or desirable to develop the body of internal Six Sigma experts – referred to as black belts – used in large corporations (Burton & Sams 2005). In the place of internal experts, such organisations may wish to employ a consultant to provide employee training and project facilitation. Many community colleges, universities, and professional training organisations also provide training and support for organisations wishing to implement Six Sigma (Klaus 1996).

A second issue to consider is that not all work that employees perform may be suitable for the application of Six Sigma quality improvement techniques. Activities of non-profit arts and cultural organisations are classified as either supporting or primary. Supporting, or non-core, activities sustain the organisation’s primary activities (Table 1). These activities typically do not contain a significant aesthetic element. Examples of support activities include governance, administration, fundraising, and outreach (Preece 2005). These activities are performed in most non-profit service organisations and often provide excellent opportunities for improvement. Primary, or core, activities directly support the mission of the organisation. They fall either into the category of aesthetic or administrative – but include an important aesthetic component. For example, the conducting of an orchestral performance is a primary aesthetic activity. Program development and the selection of ensemble personnel for an orchestra are primary administrative functions with a strong aesthetic component. The aesthetic components of these primary activities make it problematic – but perhaps not impossible – to apply the Six Sigma concepts.

That difficulty may come from the complexity of operationally defining the concepts of quality in the arts. Is it possible to define attributes such as creativity, musicianship, originality, tone, intonation, and precision in order to create adequate matrices to evaluate performance for improvement? Several authors have attempted to apply the concept of quality dimensions (Garvin1984) to service organisations. To Garvin’s dimensions of features, reliability, conformance, durability, serviceability, aesthetics, and perceived quality, they suggest additional measures of accessibility and
convenience, accuracy, competence, completeness, consistency, courtesy, credibility, reliability, responsiveness, security, timeliness, and waiting time (Evans & Lindsey 2004; Berry, Zeithaml & Parasuraman 1985). To utilise these dimensions, an organisation first should operationally define each relevant dimension so that it can (1) determine the importance of that attribute to its customers, (2) evaluate the capability of its product or service performance to meet its customers’ needs and expectations, (3) benchmark its own performance against other organisations, and (4) measure the impact of any improvement efforts it undertakes.

Throsby and Nielsen (1980) suggest that in regard to the evaluation in the performing arts, there is no universal rule that will always distinguish quality in one performance from others but rather, a complex set of attributes. One could create a list of elements (i.e. dimensions) thought likely to contribute to the quality of a performance and use that list to direct attention to how choices based on quality are or should be made. They suggest a list of evaluation criteria (Table 2) and raise two questions in regard to interpreting this list: first, taking any single element in isolation, could one identify a scale of measurement against which it could be judged, and second, could the various criteria be combined into a balanced composite judgment?

We might compare this approach to that expressed in Goh and Xie (2004 p. 238). They ask, “Would it be totally meaningless to attempt to place a quality level on Tchaikovsky’s 1812 Overture, or the performance of the work by a particular symphony orchestra – even with every note of the composition played flawlessly? Likewise, how could we compare da Vinci’s The Last Supper with Van Gogh’s Sunflowers using conventional quality performance indices?” Certainly these are questions that deserve future study. Suffice for now that for a non-profit arts- and culture-oriented organisation, any effort to implement Six Sigma would be more likely to succeed if the organisation focuses on its non-aesthetic support activities for improvement opportunities.

A recent search of the literature found only a single example of a non-profit art- and culture-oriented organisations applying the Six Sigma approach. In this instance, the Atlanta Opera Company partnered with a team of MBA students studying Six Sigma techniques at the Georgia Institute of Technology to examine the problem of declining subscription ticket sales. Although this example represents only a short-term collaboration, it illustrates the potential benefits of the Six Sigma approach.

The Atlanta Opera had recently moved from the historic and ornate Fox Theatre where it had performed since 1995, to the larger and more modern Atlanta Civic Centre. The team surveyed opera patrons to identify variables that might affect a patron’s decision to purchase a subscription. Its analysis of the results showed location to be an important issue with atmosphere and social experience the primary factors for location preference. A survey of lapsed subscribers identified the opera’s recent move to the newer facility as playing a significant role in their decision not to renew. The team recommended changes to improve subscribers’ social experiences, to promote subscribers’ benefits, and to publicise the advantages of the newer facility. The Opera’s response was to improve its patrons’ social experience by hosting catered dinners, decorating the entrance of the new facility, initiating a subscriber reward program that provided discounts and special offers to participating area establishments, and improving concession facilities. The Opera’s current website also features a restaurant guide and a schedule for pre-performance lectures.
Closing

In this paper, I introduce some of the issues relevant to the implementation of Six Sigma techniques in a non-profit art-and culture-oriented organisation. The idea of implementing a quality improvement initiative certainly is not new – either in manufacturing, in service, or in arts and cultural organisations. However, unlike the fragmented approaches used in the past, the Six Sigma model provides an effective integrated package – a problem-solving template – for process improvement and problem-solving. For arts- and culture-oriented organisations, this means determining customers’ expectations and finding more effective and efficient approaches to meet them. The arts and culture sector provides significant opportunities for applying these methods to improve efficiency and quality through process improvement. These techniques have proven extremely effective in manufacturing, service, and government sectors. As many non-profit arts- and culture-oriented organisations perform many of the same tasks as other sectors, there is sufficient reason to expect that they should be equally successful. This is certainly not a short-term project for any organisation. Although Six Sigma implementation is a long-term process (Pande, Neuman & Cavanagh 2000; Henderson & Evans 2000; Eckes 2000; Bañuelas & Antony 2002; Bañuelas & Antony 2001), it is a proven approach that may provide enormous benefit to the operational effectiveness of non-profit arts- and culture-oriented organisations.
Table 1: Examples of support activities for non-profit arts and cultural organisations suitable for Six Sigma Projects

<table>
<thead>
<tr>
<th>Category</th>
<th>Activities</th>
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<tbody>
<tr>
<td>Governance</td>
<td>Budgeting, Strategic Planning, Organisation Assessment, Process for Establishing Alliances and Partnerships</td>
</tr>
<tr>
<td>Administration</td>
<td>Payroll, Human Resources Administration, Purchasing, Accounting, Facility Maintenance, Customer Service, Organisational Development</td>
</tr>
<tr>
<td>Fundraising</td>
<td>Grant Writing, Event Planning, Newsletter Development</td>
</tr>
<tr>
<td>Outreach</td>
<td>Advertising, Scheduling/Coordinating Programs</td>
</tr>
</tbody>
</table>
Table 2: (Throsby & Nielsen 1980)

1. Source material
   (a) Nature of source material
   (b) Overall standard of script, text, score, translation.

2. Technical factors
   (a) standard of performance (acting, dancing, singing, instrumental)
   (b) standard of production (direction, interpretation, choreography, conducting, arranging)
   (c) standard of design (scenery, costume, lighting)
   (d) standard of facility (capacity, seating, acoustics, lighting)

3. Benefits to audience
   (a) entertainment and recreation
   (b) psychological and emotional stimulation and fantasy
   (c) intellectual stimulation
   (d) articulation and interpretation of the individual’s attitudes and experience
   (e) active participation and involvement of the audience
   (f) development of the individual’s taste

4. Benefits to society
   (a) attraction of new audience
   (b) promotion of social evaluation
   (c) cultural preservation
   (d) promotion of a regional or national identity and culture
   (e) promotion of international understanding
   (f) education – especially of the young

5. Benefits to the art forms
   (a) innovation (creativity, novelty, experimentation)
   (b) training (of performers, directors, production and technical staffs)
   (c) development of local creative artists (writers, choreographers, composers)
(d) provision of examples of the best professional standard
(e) potential for touring interstate and overseas

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