

Analytics for Nonprofits

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Caroline M. Mularz
Capital University, USA

M. Ali Ülkü
Rowe School of Business, Dalhousie University, Canada

INTRODUCTION

This chapter aims to provide a framework of the uses of analytics and optimization in the setting of Nonprofit Organizations (NPOs) through the lens of an input-output process, while offering pointers for future research. An NPO is an entity with a social mission to meet a public or community need, and focus their resources to achieve goals that benefit their consumers. NPOs “play a variety of social, economic, and political roles in the society. They provide services as well as educate, advocate, and engage people in civic and social life.” (Boris & Steurle, 2006, p.66)

The non-profit sector comprises a great variety of NPOs such as universities, hospitals, homeless shelters, charities, disaster relief organizations, and the like. Salamon and Anheier (1992 a and b) develop a taxonomical foundation to clarify some important definitions in the non-profit sector. To enable comparative and cross-national research on NPOs, the following international classifications are commonly used (cf. UN Handbook, 2003): Culture and recreation (e.g. National Association of Latino Arts and Culture), education and research (e.g. Summer Science Program), health (e.g. Cancer Research Institute), social services (e.g. Salvation Army), environment (e.g. Center for Biological Diversity Inc.), development and housing (e.g. Community Housing Partnership), law/advocacy and politics (e.g. American Civil Liberties Union), philanthropic intermediaries and volunteerism promotion (e.g. United Way, Peace Corps), international (e.g. Oxfam International), religion (e.g. Anti-Defamation League), business and professional associations/unions

(e.g. Association of Fundraising Professionals), not elsewhere classified (e.g. Goodwill Easter Seals (workforce development), Communities in Schools (at-risk youth), AARP (aging), Humane Society (animal welfare), etc.).

As of 2010 there are over 1.56 million nonprofits in the United States. These NPOs contributed 5.5% to the U.S. GDP and employed 9.2% of the workforce (National Center for Charitable Statistics, 2012). Funding agencies put more and more pressure on NPOs to achieve higher standards in their effectiveness and efficiencies (Bradley et al., 2003). This research takes a deeper look on how the NPOs operate and how the current Operations Research/Management Science (OR/MS) literature can help NPOs achieve operational excellence.

NPOs in the United States meet tax-exempt status as corporations or trusts in over twenty-seven categories. These organizations are registered as tax-exempt 501 (c)(3) subsector with the Internal Revenue Service as a public charity; they cannot exist to benefit individuals, private shareholders, or be political (www.irs.gov). The fundamental difference between a For-Profit Organization (FPO) and NPO is that the latter directs resources to meet goals to benefit their consumers. Any profits generated by NPOs are redirected into the agency to benefit the consumer or for expansion ventures, but not for private gain. In stark contrast, a FPO exists to earn a profit which benefits their shareholders. FPOs accomplish this through the provision of targeted goods or services to maximize profit. A more recent development in this sector is the Public-Private Partnership (PPP). These have the heart of a NPO with a social mission and public

DOI: 10.4018/978-1-4666-5202-6.ch012

sector employees as well as the support of private sector resources to assist in meeting that social mission. The United States Interagency Council on Homelessness identifies Community Shelter Board in Columbus, OH as a National model for successful PPPs. It should be noted that there is a higher level of culpability and scrutiny for PPPs due to increased requirements for transparency, accountability, and additional reporting.

OR/MS, as applied in FPOs, has had some success within the NPO industry in providing humanitarian and disaster relief; however there remains significant divergence in other industries. Consider the basic operations supply-chain model (Figure 1): inputs enter some process that transforms those inputs and produces an output of a product which is then sold for a profit. In FPOs, the entire process begins with capital raised from shareholders or debt incurred using assets as collateral. NPOs by definition do not have the flexibility to recruit shareholders to invest capital and provide revenue. The result, Privett (2012) concludes, is NPOs supply-side of the equation is in the form of *Funding* received through fundraising, competitive grant awards, and revenue from third party payers providing moderate income from such sales as tickets and gifts. The transformation process is the form of *Production and Activity* where coordination of services occurs to meet agency objectives. Finally, outputs of NPOs, which are *Consumer Outcomes*, and are evaluated by performance measures.

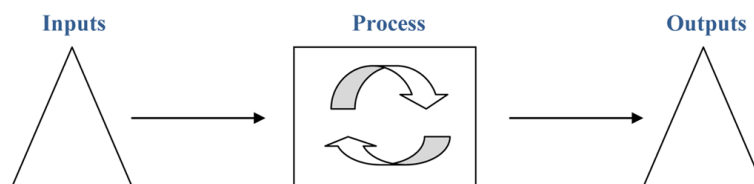
Due to the limited potential of revenue supply for NPOs, there is significant competition at play. In any given geographic region there is a limited

donor pool. NPOs are competing for grants at the city, county, state, regional, foundation, national, and international levels. Evaluation of NPO programs is becoming more competitive and agencies that fall short of being a ‘high performer’ are at risk of their revenue stream being decreased or lost. Despite the fundamental rift between the purpose of FPOs and NPOs, many revenue and cost-related problems that NPOs are facing today can be solved by business analytic techniques. For example, McNeill (2012) reports that 97% of FPOs exceeding \$100 million in revenue are successfully using these techniques. Of course, most NPOs operate with smaller budgets than \$100 million. For example, it is reported that 80% of the NPOs have revenues less than \$1 million (Public Allies, 2011). Knowing that the systematic collection of data and transforming them to make better managerial decisions using analytics will be challenging in terms of resources for those NPOs, they can still benefit from some basic quantitative decision making procedures employing spreadsheets such as MS Excel that are commonly available.

NONPROFIT ANALYTICS

From a supply chain perspective, most business plans of NPOs manage three primary functions: supply side (funding, revenue, fundraising, competition); production and activity (objectives, coordination, production process); and the consumer side of outcomes / outputs (including evaluation and measurement) (Privett, 2012). Analytics can

Figure 1. The transformation process



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