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Benchmarking efficiencies and strategies for resale operations of a charity organization

Seong-Jong Joo
College of Business, Central Washington University, Ellensburg, Washington, USA

Philipp A. Stoeberl
Department of Management, John Cook School of Business, Saint Louis University, St Louis, Missouri, USA, and

Ik-Whan G. Kwon
Consortium for Supply Chain Management Studies, John Cook School of Business, Saint Louis University, St Louis, Missouri, USA

Abstract

Purpose – This paper aims to analyze and benchmark the operating efficiency of resale shops run by a charity organization and to suggest strategies for improved operations.

Design/methodology/approach – Data envelopment analysis (DEA) was used to compare the operations of nine resale shops of a charity organization. Data include annual reports of the shops for two years.

Findings – The relatively efficient shops are located in the affluent communities, the eastern parts of the city. Accordingly, location is a major contributor to operating efficiency. For resource utilization, charges related to buildings are mostly underutilized among expenses, especially ownership costs and rents. DEA was found to be a useful approach for benchmarking resale operations.

Research limitations/implications – This study is subject to the limitations of DEA, which measures relative technical efficiencies of decision-making units. Results will vary according to data and decision-making units included in the model.

Originality/value – The contributions of this study are found in the first attempt for benchmarking resale operations of a charity organization and in its strong practical application.

Keywords Benchmarking, Operations management, Charities, Data analysis, Strategic planning

Paper type Research paper

Introduction

The National Association of Resale and Thrift Shops (NARTS, Press Kit, www.narts.org/press/) states that resale is one of the fastest growing businesses of the retail industry and estimates over 20,000 resale shops exist across the USA in 2005 (www.narts.org). Resale is well perceived by consumers because of bargain prices and the recycling of used goods. There are three types of resale operations: thrift, consignment, and resale shops. Thrift shops are run by not-for-profit organizations such as the salvation army, goodwill industries, schools, hospitals, and churches. Consignment shops receive goods on a consignment basis by paying the owners of goods a proportion of revenues received when and if the products are sold. Resale shops represent all types of stores that sell used goods. However, narrowly defined, resale

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shops are stores excluding both thrift shops and consignment shops. We use "resale shops of a charity organization" for thrift shops in this study. We measure the relative efficiency of resale operations for benchmarking and suggest strategies for a charity organization located in a city in the USA[1]. According to the 2002 annual report of the charity organization, revenues from resale operations, which are sales from donated goods, account for 78 percent of total revenues. Capital campaigns in this area are extremely competitive and as a result, contribute only 2 percent to the total revenues of the organization in 2002. As the annual report reveals, the resale operations are major sources of revenues for the organization and, thus, are selected for analysis. This study will analyze operating expenses and revenues for the resale shops of the organization and compare relative efficiencies among the shops. Based on these efficiency measures, strategies for resale operations will be discussed. Also, directions for additional analyses will be presented.

The results of this study are applicable to similar organizations and can be extended to resale operations in most areas with minor modifications. In particular, this study is suitable to benchmarking and continuous improvement over time in resale operations. Although the necessity of benchmarking for not-for-profit organizations is raised for providing donors with accountability (Torres and Pina, 2003), there is no study for charity organizations. Accordingly, this study is unique as it is the first attempt to benchmark resale operations of a charity organization. The study consists of descriptions of the operations of the charity organization, data collection, methodology (data envelopment analysis – DEA), results, discussion, and conclusion.

Resale operations of the charity organization

The organization operates nine resale shops in the city. Each shop receives and sells donated goods such as textiles, furniture, electrical/mechanical goods, shoes, and other items at its location. Operating revenues are generated from selling the goods to customers with relatively low-income levels. That is, the organization provides donated goods with exceptionally low prices to people in need of bargains. Figure 1 shows overall revenues in 2002. As Figure 1 shows, the revenue from selling donated

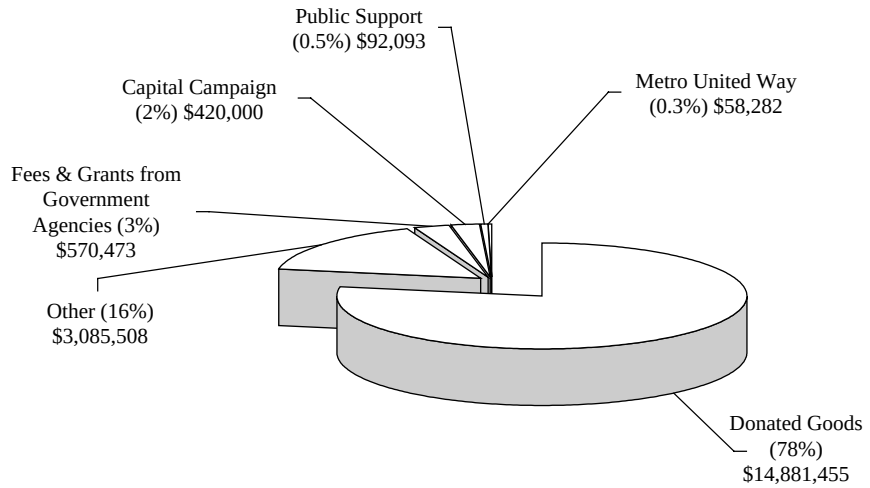

Figure 1.
Revenues in 2002

goods is a major source of income (78 percent) to the organization and requires a focused approach for managing the resale shops.

Operating expenses can be categorized into three components as presented in the annual reports: salaries and wages including benefits, costs related to building, and other expenditures. The organization hires physically or mentally disabled people[2] for its resale shop operations and financially supports them by paying them salaries and wages. Costs related to building include expenses required for occupancy such as ownership and rent, maintenance and repairs, trash removal and dump fees, and other costs. Expenses other than salaries and wages and building are classified as other expenses. The expenses and revenues mentioned in this section will be used as inputs and outputs, respectively, for modeling in the following sections.

Methodology

Benchmarking is a management approach to implement the best practices found in similar industries or even in different industries in order to improve the performance of an organization. Originally, benchmarking was designed by Xerox Corporations in 1979 to overcome quality and cost problems created by challenges from Japanese copier machines (Horvath and Herter, 1992; Jackson, 2001). Nowadays, benchmarking is widely used to achieve competitive advantages by implementing best practice into organizations (Elmuti and Kathawala, 1997; Hinton *et al.*, 2000). Although a framework for benchmarking charity fundraising costs is suggested (Lee, 2003), it seems that benchmarking is not a popular tool for managing charity organizations. Specifically, no benchmarking study was found with regard to resale operations of charity organizations during the development time of this study.

DEA is a useful approach for measuring relative efficiency among similar organizations or objects (Charnes *et al.*, 1978). An entity that is an object to be measured for efficiency is called a decision-making unit or DMU. It should be noted that a DMU can be a firm, a department in an organization, or an individual (Chilingerian, 1995; Chilingerian and Sherman, 1994; Chu *et al.*, 2003). Since, DEA can identify relatively efficient DMU(s) among a group of given DMUs, it is a promising tool for benchmarking. Recent benchmarking studies with DEA can be found in retailing (Barros and Alves, 2003), logistics and transportation (Ross and Droge, 2002; Sun, 2004; Yoshida and Fujimoto, 2004), banking (Manandhar and Tang, 2004; Soteriou and Zenios, 1999), and hospitality businesses (Sigala *et al.*, 2005). Virtually, however, most studies using DEA can be classified into a benchmarking category because of DEA's nature of measuring relative efficiency.

To explore the mathematical property of DEA, let E_0 be an efficiency score for the base DMU 0 then:

$$\text{Maximize} \quad E_0 = \frac{\left\{\sum_{r=1}^{R} u_{r0} y_{r0}\right\}}{\left\{\sum_{i=1}^{I} v_{i0} x_{i0}\right\}} \tag{1}$$

subject to:

$$\frac{\left\{\sum_{r=1}^{R} u_{r0} y_{rk}\right\}}{\left\{\sum_{i=1}^{I} v_{i0} x_{ik}\right\}} \leq 1 \quad \text{for all } k \tag{2}$$

$$u_{ro}, v_{io} \geq \delta \quad \text{for all } r, i, \tag{3}$$

where, y_{rk} – observed quantity of output r generated by unit $k = 1, 2, \ldots N$; x_{ik} – observed quantity of input i consumed by unit $k = 1, 2, \ldots N$; u_{rO} – the weight to be computed given to output r by the base unit 0; v_{iO} – the weight to be computed given to input i by the base unit 0; δ – a very small positive number.

The fractional programming model can be converted to a common linear programming (LP) model without much difficulty. Although the LP model can be solved with ordinary LP software, the use of various DEA solvers can save time and effort for solving the LP model.

Major DEA studies have utilized selected organizations and departments or branches in organizations as DMUs for measuring their efficiency. However, some studies have demonstrated that DEA can be used for evaluating personal efficiency by choosing, for example, physicians as DMUs (Chilingerian, 1995; Chilingerian and Sherman, 1994; Chu *et al.*, 2003). Thus, DEA can be employed for measuring the efficiency of any entity, which has inputs and outputs and is homogeneous with peer entities in an analysis. According to a recent DEA study, there is a remedy for a group of entities that are not homogeneous (Haas, 2003). Thus, DEA can be applied to the wide variety of DMUs without much restriction as long as DMUs satisfy the basic requirements of inputs and outputs. In addition, DEA is applicable to DMUs with categorical and uncontrollable (or environmental) input data (Athanassopoulos and Thananssoulis, 1995; Mahajan, 1991). Since, DEA is solved with LP, it inherits the same limitations as found in using LP. Especially, degeneracy with LP can be a problem for benchmarking studies by neglecting an alternative optimal solution (Fumero, 2004). In this case, a two stage LP method is suggested for detecting degeneracy.

Since, this study focuses on the operating efficiency of resale shops in an organization, we have examined the operating efficiency of branches, departments or units within organizations. Bank branches have been favorite research targets for evaluating operating efficiency (Giokas, 1991; Haag and Jaska, 1995; Manandhar and Tang, 2002; Oral and Yolanda, 1990; Sherman and Gold, 1985). Another stream of DEA application for operating efficiency can be found in studies of electricity generating plants (Athanassopoulos *et al.*, 1999; Golany *et al.*, 1994; Park and Lesourd, 2000; Pollitt, 1996). Other DEA applications include measuring operating efficiency for service sector outlets (Banker and Morey, 1993) and the US airports (Sarkis, 2000).

Data

DEA requires two types of data: inputs and outputs. We consider operating expenses as inputs and operating revenues as outputs. Expenses and revenues are frequently analyzed in the form of financial ratios. However, financial ratios can show only *ad hoc* and partial performance of organizations (Feroz *et al.*, 2003). DEA, on the other hand, can measure managerial or operating efficiency of organizations consistently and reliably with financial data. Thus, we employ DEA for this analysis to overcome problems with financial ratios. We employ three inputs and outputs, respectively, in the model: payroll (Payroll), occupancy (Occupancy), and other expenses (OtherExp) for inputs and revenues from selling textiles (Textiles), wares (Wares), and other (OtherRev) for outputs. Details for the inputs and outputs will be explained in the

following paragraph. Since, DEA can provide better results when the number of DMUs exceeds twice the total of inputs and outputs, we restrict the combined number of inputs and outputs to six in the model (Drake and Howcroft, 1994). We investigated nine shops for two years from October 2001 to August 2003 except for one that did not have data for the fiscal year (FY) of 2002. Thus, we have 17 groups of observations or DMUs. Because FYs begin in each September and this data was prepared in September 2003, it contains expenses and revenues for 11 months for each year in this study.

Operating expenses are classified into three cost categories: payroll, occupancy, and other. The results of DEA analysis will show underutilized resources among the three expense categories. Payroll includes two different sources. Salaries and wages paid to physically or mentally disabled employees represent the organization's mission-related payroll. Accordingly, the organization contributes revenues to communities and achieves mission-related objectives by hiring disabled people. Wages and salaries paid to employees who are not disabled are assigned to another payroll account. Occupancy includes costs related to shops and office buildings. If the building is owned by the organization, the expenses will include costs for maintenance, utilities, insurances, etc. On the other hand, if the building is not owned by the organization, rent will be added to occupancy. Thus, we expect that shops with rent may be less efficient than if owned by the organization, assuming other factors are the same. Other expenses include office supplies and miscellaneous fees.

According to NARTS, clothing for plus sizes, teens, and men and furniture are fast growing sales items. Given this fact, we classify revenues into three categories to construct outputs. The three outputs are revenues from selling donated textiles, wares, and other goods. Textiles are clothing, draperies, and similar items. Wares include small appliances, electrical equipment, sporting equipment, etc. Other goods consist of furniture, shoes, and miscellaneous equipment.

Results and discussion

The DEA model employed in this study is configured with output maximization and constant returns of scale. The model is solved using specialized software for DEA. The results provide two types of reports: one for efficiency scores of all DMUs in the model; the other for potential improvement for inputs and outputs. Since, we have selected the output maximization option, the results will show potential increases of revenues for three different sources and underutilization rates for each expense category. Table I shows the efficiency scores of DMUs or shops expressed in percentages.

Shops 1, 7, and 8 consistently maintain 100 percent efficiency scores over a two-year period. Shops 3 and 5 have experienced increases in their operating efficiencies. Meanwhile, Shops 2, 4, and 9 show decreased efficiency scores in the second year. Shop 6 is the least efficient one among the shops studied. The three shops that have achieved 100 percent efficiency scores for two years share one common factor. They all are located in the affluent communities, the eastern parts of the city. Accordingly, location is a major contributor to the operating efficiency. We can further generalize support for this result by stating that these shops receive quality items, and as a result, attract more customers than the other shops. In addition, the results indicate that the customers who live in generally poor neighborhoods and the western parts of the city must travel to the shops in the affluent neighborhoods to buy quality goods. Unfortunately, some of them do not have cars and must rely on public transportation.

Shops	Year 2002	Year 2003
1	100.00	92.73
2	100.00	100.00
3	78.52	92.90
4	100.00	78.45
5	92.58	100.00
6	N/A[a]	70.86
7	100.00	100.00
8	100.00	100.00
9	83.56	82.65

Note: [a]Data was not available for Shop 6 in 2002

Table I.
Efficiency scores (percentage)

Employees with physical or mental disabilities working at these shops have the same problem with respect to accessibility and use of public transportation. To resolve this problem, sharing donated goods, especially quality goods, among shops is strongly recommended. Another option to consider is that the organization may well wish to operate only receiving posts rather than reselling shops in the affluent neighborhoods and open additional resale shops in the poorer downtown and western areas of the city. This option will increase the accessibility of both the customers, as well as disabled employees in the downtown and western areas of the city. In addition, this strategy would decrease expenditures and investment in buildings in the eastern part of the city where property values and rents are relatively high. Table II shows both potential improvement and resource underutilization rates for the shops with efficiency scores of less than 100 percent. The potential improvement rates, which are the positive numbers in the table, indicate that the shops can increase their revenues by improving the operating efficiencies similar to those of the peer shops with 100 percent efficiency scores. By the same token, the underutilization rates, the negative numbers in the table, show that the shops have underutilized resources or expenses. Shops 2, 7, and 8 are not included in Table II since they are 100 percent efficient in the model and potential improvement and underutilization rates are all zeros.

		Revenues			Expenses		
Shops	Fiscal year	Textiles	Wares	OtherRev	Payroll	Occupancy	OtherExp
1	2002	0	0	0	0	0	0
	2003	7.85	7.85	12.37	0	0	−24.48
3	2002	27.35	27.35	34.17	0	−29.43	0
	2003	7.64	7.64	16.65	0	−24.89	0
4	2002	0	0	0	0	0	0
	2003	27.46	27.46	27.46	0	−13.89	0
5	2002	8.01	8.01	39.95	0	−30.66	0
	2003	0	0	0	0	0	0
6	2002	N/A	N/A	N/A	N/A	N/A	N/A
	2003	41.12	41.12	41.12	0	−40.72	0
9	2002	19.68	19.68	28.47	0	−31.20	0
	2003	20.99	20.99	20.99	0	−26.80	0

Table II.
Potential improvements for revenues and underutilization of expenses (percentage)

The findings indicate that shop managers need to pay attention to increasing revenues according to potential improvement rates. Also, sharing donated goods among shops is a viable option to increase revenues of the shops with inefficient scores. For expenses, payroll is fully utilized across the shops, without exception. It may indicate that payroll is structured too tightly, leaving room for a bit more generosity. Accordingly, an increase in payroll might be considered especially for disabled employees. Alternatively, hiring additional disabled sales people would also be consistent with the organization's mission and potentially increase sales/revenue by enlarging its work force size. Charges related to buildings are mostly underutilized among expenses, especially ownership costs and rents. Thus, it is recommended that managers make every effort to control these expenses to boost overall efficiencies. The underutilization rate of other expenses of the Shop 1 in FY 2003 is related to high expenditures for resale supplies and bank service fees. The manager of the shop needs to address these costs for possible reduction.

Conclusion

Although the charity organization in this study attempted to diversify its operations recently, its resale shops, which sell donated goods, are still the major sources for its revenues. The organization may feel uncomfortable with its image of selling donated goods and pursue diversification into other fields. However, competition among charity organizations is very intense, all vying for the limited dollars available. Thus, entrenching its strength in resale operations is as important as seeking diversification. Operating resale shops has dual goals such as providing people in need with inexpensive goods and hiring disabled people for their resale operations. This study analyzed nine resale shops for two years using DEA, which is a useful approach for measuring relative efficiency among entities that have similar inputs and outputs. Based on the results of DEA, we have suggested potential improvement for outputs and better utilization for inputs. By focusing on the resale shops in affluent communities, we draw the conclusion that appropriate strategies are required to support the organization's mission while boosting revenues. First, the organization should consider relaxing its tight mission payroll policy and/or hire additional disabled people. Second, sharing quality, donated goods among the shops, which are easy to distribute, such as textiles and small appliances is desirable in order to improve the accessibility of these goods by customers in the downtown and western parts of the city. Third, the organization may wish to pursue aggressively opening additional resale shops in the downtown and western areas. Disabled employees would be benefit from greater ease of access to these shops. Fourth, the organization may well wish to consider converting resale shops in the affluent communities to receiving posts and decrease expenditures and investments in properties in these high-cost areas, which are notably more expensive than the downtown and western portions of the city.

This study can be further generalized as additional data becomes available similar to the past two years. The contributions of this study are found in its first attempt for benchmarking resale operations of a charity organization and its strong practical application. Finally, to achieve continuous improvement for the resale operations of the organization, this study should be replicated using a longer time period as additional data becomes available and be conducted on an on-going basis.

Notes

1. The names of the city and the organization will be kept anonymous at the request of management.
2. It will be helpful to readers to provide the legal definition of "disability" because the definition can be different around the world. The Americans with Disabilities Act (US Congress, 1990) defines disability as "a physical or mental impairment that substantially limits one or more of the major life activities of an individual; a record of such impairment; or being regarded as having such an impairment".

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Corresponding author
Seong-Jong Joo can be contacted at: joos@cwu.edu