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Factors Influencing Revenues of the Landscape and Lawn Care Companies[1]

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Abstract

The purpose of this study was to determine the impact of key factors influencing the landscape maintenance and lawn care industry (LM/LC) sales or gross revenue as well as partial net revenue (gross revenue less labor cost). A single-equation framework was applied for the estimation of gross and partial net revenue models. Analysis showed a positive influence of labor cost on gross revenue. In comparison to individually owned firms, corporations can expect larger revenue increases. Companies with extended business experience (measured by the number of years in operation) could expect not only greater gross revenue but also greater partial net revenue. The level of education of supervisory personnel was specifically important for partial net revenue. Offers of price discounts for services enhanced gross revenue but not partial net revenue. Price discounting may help in the management of labor and cash flow in the short run, but the LM/LC company must recover overhead costs to stay in business. Population density continues to play a major role in improving the revenues of LM/LC companies.

Index words: corporation, revenue, labor, survey.

Significance to the Nursery Industry

Over the past decade the landscape maintenance and lawn care (LM/LC) industry has shown rapid growth in the State of Georgia. Such expansion prompted this study with the underlying objective to develop an empirical model for the gross and partial net revenue of the LM/LC firms. The specific objective is to identify factors influencing firm gross and partial net revenues. This study is the first attempt in the applied economics literature to quantify specific effects of firm characteristics on LM/LC industry revenues. The study results should contribute to a better understanding of an LM/LC company's variable production costs and improve decision-making and successful management. Furthermore, the identification of factors that improve the gross revenue and partial net revenue of a company provides a focus for a company's efforts.

Introduction

The 'green industry' includes the production and marketing of floral and environmental horticulture crops. Crops include greenhouse and field-grown flower and foliage plants, landscape plants, bulbs, and turfgrass. The green industry generated the second highest net value-added per dollar of gross income among all agricultural commodities nationwide (1, 18).

The increasing cash receipts of the industry (Fig. 1) fostered an examination of the Georgia green industry. The industry has shown rapid growth in recent years, placing seventh among the top ten commodities in terms of total farm cash receipts in 1997 (6). The industry accounted for 4.1 percent or $252 million of total 1997 cash receipts. The farmgate wholesale value of sod and sprigs accounted for 15 percent of total cash receipts for the Georgia green industry or $36 million. Sod and sprig sales increased 41 percent between 1991and 1996 (6).

Retail expenditures for all floriculture and environmental horticulture products were estimated at $54.8 billion or $203 per capita by the U.S. Department of Agriculture in 1998. The per capita expenditures were three percent higher than those reported in the previous year. Retail expenditures for environmental horticulture crops (i.e., nursery plants, trees, shrubs, ground covers and turfgrass) reached $38.8 billion or $120 per capita.

The rapid growth of sod sales has been associated with an increase in lawn care and landscape maintenance demand. However, lawns are only one element of a landscape. Sales and maintenance of other plants have further contributed to the green industry growth. Georgia's population has been growing rapidly and the house ownership ratio exceeds the national average (19). A substantial number of Southerners, 10 percent, purchased lawn care and landscape maintenance services in 1998 (17). The Atlanta metropolitan area is a particularly attractive market for environmental services because of the dense population.

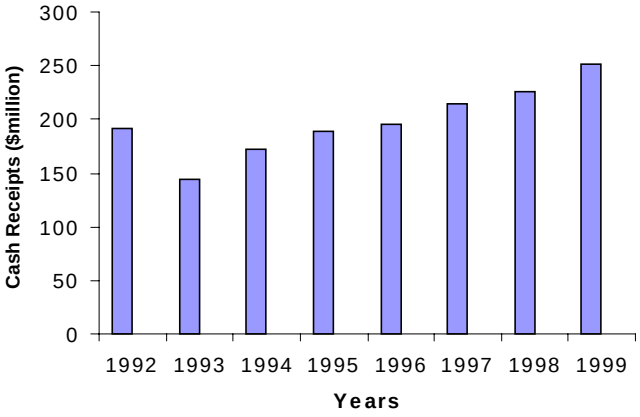

Fig. 1. Cash receipts of nursery, green house, and turf industry.

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This paper focuses on one segment of the green industry: the landscape maintenance and lawn care (LM/LC) services provided by firms organized in three professional associations operating in Georgia. Only members providing LM/LC services were selected for this analysis.

The growth of the LM/LC industry in the State of Georgia (6) prompted this study with the underlying objective to develop an empirical model for the gross and partial net revenues of the LM/LC firms. The specific objective is to identify factors influencing firm gross and partial net revenues. This study is the first attempt in the applied economics literature to quantify specific effects of firm characteristics on LM/LC industry revenues. The study results should contribute to a better understanding of an LM/LC company's variable production costs and improve decision-making and successful management. Furthermore, the identification of factors that improve the gross and partial net revenues of a company provides a focus for a company's efforts.

The limited research to date on the industry has been in the descriptive form of economic profiles of a particular state or metropolitan area. Earlier work (7) indicated that the landscape industry, involving the design, installation and maintenance, was the fastest growing agricultural industry in Connecticut. A study by the Bureau of Business and Economic Research (1) revealed that the fast growth of the LM/LC services contributed to the increase in employment and payroll. A report by Hubbard et al. (11) for the State of Georgia indicated that population and income growth, the popularity of planned communities, and a mild climate contributed to the growth of the LM/LC segment of the green industry.

A study by Cox et al. (3) showed that tracking growth in landscape services is complicated by the lack of data and outdated or inappropriate classification. The study also showed that landscape services are becoming more important as a source of employment relative to agricultural production. The size of the LM/LC industry will increase as more efforts are made to make natural scenic areas more accessible.

A survey conducted by Florkowski et al. (4) showed that business characteristics like age of the firm and form of business structure are important factors impacting gross revenue of a company. The study also revealed that most of the LM/LC companies are based in and around metropolitan areas and such firms tended to have larger gross revenues.

The LM/LC sector in Georgia is located primarily in metropolitan Atlanta (5). The landscape maintenance sector was found to be primarily involved in outdoor maintenance projects (97 percent of firms). The larger firms appeared to be more diversified and accounted for 26 percent of the respondents and approximately 72 percent of the revenue for all the surveyed firms.

Materials and Methods

The information about sales of the LM/LC industry is available only at spatially aggregated levels, i.e., total sales in a single state or nationwide during a calendar year. Such data are inadequate to provide insights about factors influencing the economic performance of the industry. To obtain disaggregated, detailed data, investigators must engage in primary data collection. Industry surveys are notoriously difficult because the nature of the data is often perceived as 'sensitive' by respondents although anonymity is guaranteed and data are used only for research purposes.

Table 1. Distribution of firms surveyed by category of gross revenue, 1998.

Gross revenue range	Number of firms	Percentage
Less than $200,000	81	36.3
$200,001–$500,000	52	23.3
$500,001–$1,000,000	29	13.0
More than $1,000,000	61	27.4

Data used in this study were collected by a mail survey in the spring of 1999. The design of the survey instrument was developed in conjunction with three major professional organizations, i.e., the Georgia Green Industry Association (GGIA), the Georgia Turfgrass Association (GTA), and the Metropolitan Atlanta Landscape and Turf Association (MALTA). These associations expressed direct interest in conducting the survey to gain insights about the performance of their member firms. Mailing lists from these associations provided addresses of firms that received the questionnaire.

The survey was conducted in three stages between February and April of 1999: following the first mailing, a postcard was sent a week later as a reminder; two weeks later, a second mailing of the questionnaires went to those firms which did not respond to previous mailings. In order to collect data within a reasonable time period, responses included in the study arrived within 6–7 weeks from the date of the first mailing. The rate of return was 45 percent. This rate of participation by a business sector is considered high, particularly when conducted during the major work season.

Information provided by respondents made it possible to classify the companies into four categories according to gross revenue received in 1998 (Table 1). According to survey results, 36.3 percent of the firms reported gross revenues less than $200,000. Companies which reported gross revenues in excess of $1,000,000 represented 27.4 percent of the total number of firms surveyed. Survey data (Table 2) indicated that the LM/LC firms were primarily corporations (62.9 percent). Independent firms represented 37.1 percent.

The crucial economic variables based on economic theory and the previously cited literature affecting gross revenue of the LM/LC firms are hypothesized to be the labor cost, the type of company, the number of years a company has been in operation, price discounts, the level of education of supervisory personnel, the percentage of the total revenue received from commercial clients, and location in the Atlanta area. Labor cost is an important factor as the LM/LC industry is service based. Attracting and retaining workers in this industry has been a problem. Starting wages typically exceed the minimum wage by a dollar (15). The results of the survey suggest that labor costs are approximately equal in amount to one third of the total revenue earned by the company (calculation based on figures shown in Table 3). Partial net revenue (Pnr) is defined as the difference between gross

Table 2. Distribution of firms surveyed by type of ownership, 1998.

Ownership type	Number of firms	Percentage
Corporation (including franchise)	154	62.9
Independent[z]	91	37.1
Total	245	100.0

[z]Indicates sole proprietorship or partnership.

Table 3. Means, ranges, and standard deviations of variables included in the gross revenue model.

Variable	Description	Mean	Min	Max	Standard deviation
Gr	Gross revenue reported by a company, in thousand dollars	1,097.80	0.70	14,000	2,017.57
Labor	Labor cost reported by a company, in thousand dollars	345.80	0.40	4,000	600.02
Corporation	Type of company, 1= corporation, 0 otherwise	0.59	0	1	0.49
Years	Number of years a company has been in operation	11.47	0	110	12.80
Education[z]	Education level of supervisory personnel min = 0, max = 7	3.40	0	7	1.51
Discount	Price discount offered by a company1= yes, 0 otherwise	0.50	0	1	0.50
Comclient	Percentage of revenue from commercial clients	39.08	1	100	36.08
Metro	Location of the company in metro Atlanta 1= yes, 0 otherwise	0.56	0	1	0.49

[z]Education levels are coded as 1 = Elementary, 2 = High school, 3 = Technical, 4 = College (2 yrs), 5 = College (4 yrs), 6 = Master, 7 = Doctorate.

revenue (Gr) and the labor costs of the company. The variables effecting the partial net revenue are hypothesized to be the same as the variables influencing gross revenue except for the labor costs, where

$$Gr = f(Lab, Corp, Yrs, Educ, Dis, Comcl, Met) \quad (1)$$

$$Pnr = f(Corp, Yrs, Educ, Dis, Comcl, Met) \quad (2)$$

Table 3 shows the descriptive statistics of variables included in the model. The average gross revenue of surveyed companies was $1,097,796.77. The average labor cost of the companies surveyed was reported to be $345,792.41. The effect of the labor cost incurred by the company on gross revenue is expected to be positive because of the contribution of labor.

A business characteristic like the number of years the company has been in operation, the assumed age of the firm, can be an indicator of the economic success of a company. The average age for the companies was high, 11.47 years, which compares to five years in a study by Florkowski et al. (1996). Because the number of years in operation is an implicit measure of management experience in providing service, the age of a firm is expected to have a positive effect on gross and partial net revenues.

The ownership type of a company is a proxy for the scale of business operation. Cox et al. (3), noting the lack of data on corporate returns to landscape services, reported that in the late 1970s, about 13 percent of landscape service firms were corporations. Corporations formed approximately 63 percent of the firms responding to the current survey. The corporate type of ownership is expected to have a positive effect on gross and partial net revenues.

The business practices adopted by the company are crucial for repeat business from clients. The practice of offering discounts can have a positive impact on gross and partial net revenues. One half of the companies surveyed reported offering price discounts on the services offered.

Quality of management is very important for the economic viability of a company. The level of education of supervisory personnel can affect quality of management. Therefore, a positive relationship between the level of education of supervisory personnel and the gross and partial net revenues of a company is plausible.

The type of clients served by the company is another important factor for economic success. Previous studies suggest a positive relationship between the number of commercial clients served and the gross revenues of a company. Commercial clients are defined as non-residential customers. Non-residential customers include retail outlets owning a landscape which requires maintenance, companies located on parcels of land consisting of lawns and landscaped areas (e.g., landscaped parking lots, parks). Also, they do not have in-house maintenance crews and must hire professional service providers for the purpose of proper landscape upkeep. Commercial clients may own areas of various sizes, but they consistently purchase maintenance services providing a steady flow of revenues. The dependence on hired professionals and preference for quality service may also make commercial customers less sensitive to prices charged by a landscape maintenance firm.

The use of cross-sectional data presents a potential problem of heteroscedasticity. The natural log of the dependent variable was used in the model to eliminate heteroscedasticity. The Breusch-Pagan test was employed to check the estimates for any unknown form of heteroscedasticity (8). Based on goodness of fit, industry reports, and economic concepts, the following forms for LM/LC company gross and partial net revenue models were deemed appropriate:

$$\ln(Gr) = \alpha_0 + \alpha_1 Lab + \alpha_2 Corp + \alpha_3 Yrs + \alpha_4 Dis + \alpha_5 Educ + \alpha_6 Comcl + \alpha_7 Met + vi \quad (3)$$

$$\ln(Pnr) = \alpha_0 + \alpha_1 Corp + \alpha_2 Yrs + \alpha_3 Dis + \alpha_4 Educ + \alpha_5 Comcl + \alpha_6 Met + vi \quad (4)$$

Results and Discussion

The parameter estimates for the gross and partial net revenue equations for the LM/LC industry in Georgia are shown in the Tables 4 and 5, respectively. The measure of goodness of fit of the equations estimated using cross sectional data was reasonably good indicating that 56 percent of the variation in gross revenue and 46 percent of the variation in partial net revenue were explained by the specified models.

The LM/LC industry is labor intensive, thus labor cost is an important factor in the operation of the business. A company must pass labor costs to consumers in order to remain in business. Companies should be able to pass on labor costs to consumers, as rising demand suggests that buyers are willing to pay for services. This is evident in the positive effect of labor on gross revenue—the contribution of labor costs to larger revenues.

Business characteristics such as the age and type of companies are important indicators for the success of a company. The age of a company is an implicit measure of management experience in providing consistent quality services. A company's age, measured by the number of years a firm has been in business, reflects the commitment of owners or managers to continually improve the expertise required to suc-

Table 4. Coefficient estimates for the gross revenue equation for landscape maintenance companies in Georgia.

Variable	Coefficient estimate	*t*-statistic	Elasticity[z]
Constant	4.03	13.23	—
Labor	0.12E-2	7.58	0.40
Corporation	0.60	3.44	—
Years	0.03	2.62	0.34
Education	0.03	0.54	0.10
Discount	0.33	2.12	—
Comclient	0.7E-2	3.05	0.27
Metro	0.53	3.25	—
Number of observations	180		
F-value	34.02		
Adjusted R-square	0.56		
Degrees of freedom	173		

[z]Elasticity estimates obtained by: $\alpha_i \bar{x}$ where α is the coefficient for the independent variable i and $\bar{x}$ is the mean of the independent variable i (8).

cessfully compete in an industry. The positive sign of the coefficient estimate for number of years in business confirms that the longer a company has been in operation, the larger are the gross and partial net revenues earned.

The ownership type represents an indirect measure of the scale of operation of a firm. The growth of a company depends on the influx of capital which generally is raised more easily by a corporation than by an independent owner. Larger amounts of capital, in turn, allow the expansion of the customer base. An earlier study (12) found that LM/LC companies organized as corporations were more likely to offer a wider range of services then individually owned firms and, therefore, were able to attract customers interested in various services. The positive effect of the corporate structure on gross and partial net revenues confirms the importance of the corporate structure to enable growth.

The business practices adopted by a company are important for economic success. A company can increase its gross revenue by adopting consumer friendly practices. An offer of a price discount on services to clients is one of the proven practices to increase a company's revenue. A positive sign of the coefficient for a discount offer (Table 4) shows that companies offering price discounts on services generated larger gross revenues. However, the coefficient was statistically insignificant in the partial net revenue equation (Table 5). It appears that the price discount may have helped to manage labor resources and cash flow, but did not contribute to partial net revenue. Consequently, although discounts aid in the flow of business operations for an LM/LC firm, they did not improve profits. This result is consistent with the motive behind a price discount offer which is to discourage competitors from entering the market and to assure the use of available labor. Evidence indicates that competitor pricing has an impact on the pricing structure in an industry (2).

Table 5. Coefficient estimates for the partial net revenue equation for landscape maintenance companies in Georgia.

Variable	Coefficient estimate	*t*-statistic	Elasticity[z]
Constant	10.08	31.82	—
Corporation	0.61	3.29	—
Years	0.08	7.75	0.92
Education	0.11	1.82	0.37
Discount	0.27	1.61	—
Comclient	0.9E-2	3.69	0.35
Metro	0.69	4.01	—
Number of observations	177		
F-value	24.41		
Adjusted R-square	0.46		
Degrees of freedom	171		

[z]Elasticity estimates obtained by: $\alpha_i \bar{x}$ where α is the coefficient for the independent variable i and $\bar{x}$ is the mean of the independent variable i (8).

Supervisory personnel employed by the company have an important role in the efficient operation of a firm. The level of education of supervisory personnel was found to significantly and positively influence partial net revenue. This result contrasts with the lack of statistical significance in the gross revenue equation. Education may not be all that cogent for the gross revenue, but supervisor education plays a significant role in the profitable operation of a LM/LC company.

According to the results shown in Tables 4 and 5, the larger the percentage of gross revenues generated by accounts of commercial clients, the larger are the gross and partial net revenues. Commercial clients tend to be more likely than residential customers to purchase highly specialized services such as planting and maintenance of annuals. In many commercial sites the landscape appearance may directly influence company image and revenues; for example banks, complexes, industrial parks, and others pay attention to 'curb appeal' (13, 14).

A location in the metropolitan area of Atlanta is preferred to locations in non-metro areas in Georgia as suggested by the positive and statistically significant relationship between the location variable and reported gross and partial net revenues. Metropolitan areas offer a higher density of residential housing and commercial properties, increasing chances for sales of LM/LC services.

Tables 4 and 5 also show elasticities calculated for nonbinary variables. The elasticity value shows the percentage change in the dependent variable as the independent variable changes by one percent. Each elasticity is calculated using the mean values of independent variables under the assumption that values of other variables are constant. The purpose of the calculation is to measure the change in gross annual or partial net revenues and to show the difference in the effect of explanatory variables on revenues. For example, for a one percent increase in labor cost, gross revenue can be expected to increase by 0.4 percent on average. This figure closely resembles the estimated cost composition of a special service provided by an established LM/LC firm; the installation of plants providing seasonal color in the landscape is about 49 percent labor costs, including wages and benefits (21). Also, for a one percent shift in obtained revenues away from residential accounts and into commercial accounts, a company can expect a 0.27 percent increase in gross revenues. Net partial revenues also increase as a result of focusing on the provision of services to commercial clients; the effect is roughly one third larger than in the case of gross revenues. Such an effect supports observations reported by industry that servicing commercial accounts provides opportunities for business expansion. Longevity of a firm affects gross revenues. A company can expect growth in gross revenues at a rate of about 3.4 percent for extending its existence by ten percent. The specification of supervisory per-

sonnel education does not permit a straightforward interpretation of its effect on revenue, but the importance of education is illustrated by comparing the size of elasticities regarding the gross and partial net revenues. The effect of the education level of supervisory personnel nearly triples in the case of net partial revenues, suggesting the importance of this variable for the economic viability of a LM/LC firm. A recent industry survey showed that personnel with a postgraduate degree could expect a 37 percent higher salary than a high school graduate (16).

The LM/LC industry is service oriented and, therefore, is labor intensive. In this context, labor cost becomes the most important factor influencing the economic viability of the company. The analysis showed a positive influence of labor cost on gross revenue. LM/LC companies are able to pass labor cost to clients. Such transmission of cost in a competitive industry can take place if demand is sufficiently strong, which has been the case because of favorable economic conditions. The Atlanta metropolitan area has experienced an unemployment rate below the national average, while home ownership in Georgia has exceeded the national average (19).

In comparison to individually owned firms, companies structured as corporations can expect larger revenue increases. This result supports earlier findings (12) that firms with corporate backing tended to offer a wider range of services, which leads to higher gross revenues. It is also plausible that corporate firms have focused on supplying services to other firms and institutions rather than residential customers. The steady population growth in Georgia and the fast pace of construction suggest that business-to-business transactions will continue to be important for gross revenue in the foreseeable future.

Companies with extended business experience (measured by the number of years in operation) can expect not only greater gross revenues but also greater partial net revenues. The calculated elasticity in case of partial net revenue was nearly one, i.e., almost three times larger than the corresponding elasticity calculated with regard to the gross revenue. Therefore, business experience, which increases with every year of operation, plays a major role in generating larger revenues and returns.

Results showed that the level of education of supervisory personnel was specifically important for partial net revenue, which is consistent with expectations. This result implies that efficiency improves in managing resources by supervisors with higher levels of education. The importance of education is thus clear.

Offers of price discounts for services enhanced gross revenue but not partial net revenue. This result is consistent with observations voiced by the industry (10) and suggests that price discounting is not profitable. Price discounting may help in the management of labor and cash flow in the short run, but the LM/LC company must recover overhead costs to stay in business (10).

Population density continues to play a major role in improving the revenues of LM/LC companies. Companies located in the Atlanta area can expect higher revenues in comparison to those located in rural areas. Survey results serve as a benchmark for comparing the LM/LC industry to similar industries in other regions. The specific range of sales or gross revenue and types of services offered may vary in response to regional weather patterns, preferences for landscape type, income levels, and demographics.

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