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Factors Influencing the Supply of Four Landscape Services[1]

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Abstract

The landscape industry is a rapidly growing segment of the economy. Growth of the industry is attributed to increasing affluence of the population and leisure time. Increasing awareness of the importance of the environment will further undergird future industry growth. A survey sample of 140 landscape firms located in Georgia yielded 137 usable questionnaires. Four equations representing the statistical relationships between the four types of landscape services 1) design, 2) installation, 3) maintenance, 4) seasonal color and independent variables representing firm characteristics were specified and estimated using logit procedure. A surveyed firm was more likely to supply landscape design services if it also supplied pruning services, landscaping was its main business activity, and the firm was located outside the Atlanta metropolitan area (AMA). The installation service supply was less likely to be among a firm's services if the firm was located within the Atlanta metro area but more if it purchased plants from other sources, and the firm practiced subcontracting. Maintenance services were impacted positively by the supply of pruning but negatively by fertilization services and location in metropolitan Atlanta. Firms in which landscaping was the main business activity and accounted for an increasing share of revenue were more likely to include seasonal color among services supplied.

Index words: design, maintenance, installation, seasonal color, survey.

Significance to the Nursery Industry

In general, the larger the firm in terms of landscaping as business activity, the more likely it was to supply all types of services, but each provided service was also influenced by other, specific factors. Those factors may differ among regions and may be different from those identified by this study for the Atlanta metropolitan area (AMA). Specific factors influencing the supply of landscape services in the AMA included: the availability of design service was more likely if a firm also supplied pruning service. Installation services were more likely supplied by firms purchasing plants from outside sources. Therefore, firms installing landscapes stimulate business activity among greenhouse firms and nurseries. Firms were more likely to provide maintenance services if they offered pruning services. Seasonal color service is added by large firms diversifying and broadening the supply of services. Firms focusing on the landscape services as the main source of revenues were more likely to deliver all four types of services discussed. In the AMA, firms tend to specialize in providing a specific landscape service or the production of landscape plants rather than combining plant production with offering landscape services.

Introduction

Urban expansion and the desire for recreation and beautification increase the demand for landscape services. Landscape services enhance the appearance of commercial, institutional, recreational, and residential properties, and in turn, the perceived value of a property. Landscaping projects the desired image of a company or a homeowner.

Landscape services together with the greenhouse and nursery industries are often called the Green Industry. The U.S. Green Industry has grown rapidly and was the sixth largest

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among agricultural industries in 1991 (6). Landscape services include design, installation, maintenance, and seasonal color displays (annual and perennial flowers). The value of landscape services increases rapidly in and near major urban centers nationwide where the residential and commercial properties are concentrated. For example, the landscape industry has been identified as the fastest growing industry in Connecticut (2).

During the 1970s and 1980s, rapid population growth of the AMA, the largest urban area in the Southeast, created a steadily growing demand for landscape services. Some of the AMA counties were among the fastest growing counties in the country (e.g., Gwinnett). The number of landscape firms operating in the Atlanta area in 1988 alone was estimated at over 200 (4). Atlanta is also headquarters for seven of the top 50 landscape firms in the country (1).

The large number of landscape firms in the AMA and the growing demand for landscape services stimulated the growth of plant production in Georgia. The state Green Industry supplies landscape firms with necessary products including sod, bedding plants, shrubs, and other nursery crops. In the 1980s, Georgia registered a strong growth in production of bedding plants and other nursery crops and had one of the fastest growing ornamental plant industries in the United States (5).

The objective of this study was to identify major characteristics of landscape firms providing four major types of landscape services: design, installation, maintenance, and seasonal color. A statistical procedure was applied to the survey data collected among landscape firms in Georgia. Results indicate characteristics of each type of service. These data can help landscape firms identify factors which influence types of services they offer and compare their situation with that of Georgia-based companies.

Materials and Methods

Survey description. A population of 400 commercial landscape firms statewide was identified using mailing lists of Green Industry associations such as the Georgia Turfgrass Association, the Metropolitan Atlanta Landscape and Turf Association, the Georgia Nurserymen's Association, the Georgia Irrigation Association, and the Georgia Commercial Flower Growers Association. Other sources included a list of certified pesticide applicators furnished by the Georgia Department of Agriculture, phone book yellow pages, and personal knowledge of the industry. From the identified population, a random sample of 140 firms was selected from cities and towns throughout the state.

A one-page confidential questionnaire seeking cooperation and support was mailed in 1988 to each sample firm along with a cover letter from the President of the Georgia Association of Landscape Professionals and an Extension Specialist. Industry organizations providing names of commercial landscape firms had the opportunity to review the survey instrument prior to its mailing. Non-respondents were contacted by an enumerator either by phone or personal visit. For a firm declining to participate in the survey, another firm was randomly selected from the population. The high cost of the follow-up with a personal visit or a telephone call and the relatively large number of respondents were the reasons for limiting the sample size to 140 firms. Usable questionnaires were obtained from 137 firms (34% of the estimated population).

Information collected through the survey provided a profile of the landscape industry in Georgia. Among posed questions was a request to indicate the percentage of annual revenue derived from landscape services since some firms were also engaged in greenhouse and nursery production. In the AMA 64% of firms operated exclusively as landscape firms compared to 44% in other areas.

Two other characteristics on which data were collected were the number of years the firm existed and its location. The number of years of the firm's existence indicated the firm's tenure necessary to establish a reputation and a market niche. The importance of the market niche differs with regard to each type of service, but is especially valuable in sales of maintenance services. Maintenance is a repeatedly purchased service and is a good indicator of sustained quality service. Maintenance requires little capital investment and, therefore, continually attracts new entrants increasing the competition among providers of such services. The location of the firm was considered important because of the potential differences in the types of services provided.

Firms providing maintenance services were asked to select applicable services from the following list: mowing; edging; pruning; fertilization; chemical, mechanical, and biological pest control; growth regulators; watering; paved area servicing; and other.

Firms providing installation services were asked about the percentage of installed plants coming from their own production versus the percentage purchased from other sources. Another question requested the percentage of gross revenues paid to subcontractors. Some firms offer a package of services, but a portion of those services is subcontracted and provided by another business.

Statistical Relationship Development. Four types of services were defined as dependent variables while data about other described characteristics of the surveyed firms served as a pool of independent variables. For each statistical relationship, the selection of independent variables was based on observations of the industry, and its performance measured by statistical tests. The logit approach was the statistical procedure applied in this study because the specification of the dependent variables as binary variables (3), i.e. the variable assumed to value of one if the responding firm supplied a service; zero otherwise.

Estimates of four equations representing the statistical relationships among the four types of landscape services and independent variables are presented in Tables 1-4. The estimation method used was CATMOD available on SAS software (7).

Results and Discussion

Types of services. The types of services offered by firms were indicated on the questionnaire by checking a series of categories. A single firm could check as many categories as were applicable to the services it offered. Four types of services were identified by this study: design, installation, maintenance, and seasonal color. Landscape design is offered by landscape architects who may independently contract to implement a design. However, a number of landscape contractors offer a package of services which may include design, installation, and maintenance. According to survey results, 75% of landscape firms provided exterior design services in Georgia, but in metro Atlanta the percentage was

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Table 1. Estimated model for landscape design services.[z]

Variable name	Estimated parameter	Chi-square	Probability level
Intercept	–0.5296	1.26	0.2624
The percent of landscaping as the firm's total business activity	–0.0127	4.88	0.0272
Revenue share	–0.0000003	4.42	0.0356
Mowing	0.7912	0.89	0.3466
Pruning	–3.7719	15.13	0.0001
Fertilization	2.6968	16.06	0.0001
Metro area	1.0992	9.10	0.0026

[z]The procedure is the same as logit procedure except that the signs are reversed. Therefore, when interpreting the results the actual direction of the impact has the sign opposite to the one reported in the table.

Table 2. Estimated model for exterior installation services.[z]

Variable name	Estimated parameter	Chi-square	Probability level
Intercept	0.3777	0.09	0.7664
The percent of landscaping as the firm's total business activity	–0.0113	1.09	0.2958
Chemical weed control	–0.8977	0.91	0.3391
Purchase of plants	–0.0317	5.00	0.0253
Fertilization	1.2850	1.53	0.2159
Watering	–2.1639	8.38	0.0038
Metro area	2.2631	9.47	0.0021
Subcontracting	–0.7756	1.91	0.1673

[z]The procedure is the same as logit procedure except that the signs are reversed. Therefore, when interpreting the results the actual direction of the impact has the sign opposite to the one reported in the table.

Table 3. Estimated model for exterior maintenance services.[z]

Variable name	Estimated parameter	Chi-square	Probability level
Intercept	–2.8452	17.97	0.0001
Years in business	0.0087	0.12	0.7304
Metro area	1.8174	10.39	0.0013
Mowing	–1.0730	1.63	0.2016
Pruning	–3.8838	17.61	0.0001
Fertilization	3.4816	22.01	0.0001

[z]The procedure is the same as logit procedure except that the signs are reversed. Therefore, when interpreting the results the actual direction of the impact has the sign opposite to the one reported in the table.

Table 4. Estimated model for exterior seasonal color services.[z]

Variable name	Estimated parameter	Chi-square	Probability level
Intercept	1.6474	4.47	0.0345
The percent of landscaping as the firm's total business activity	–0.0209	14.49	0.0001
Revenue share generated by selling landscape services	–0.0000003	2.96	0.0852
Purchase of plants	–0.0084	0.99	0.3201
Fertilization	–0.5317	1.75	0.1863

[z]The procedure is the same as logit procedure except that the signs are reversed. Therefore, when interpreting the results the actual direction of the impact has the sign opposite to the one reported in the table.

smaller—69%—suggesting that in the AMA, landscape design was more often separated from the landscape services firm than in other parts of the state; 80% of landscape firms outside the AMA provided landscape design. Often the landscape design for a new commercial or residential property is part of the documents developed by a contractor or developer. In the AMA, the landscape may be designed by a landscape architect firm, while outside the AMA, a landscape contractor with designer on staff provides the design.

Exterior landscape installation was reported by 79% of Atlanta metro firms, 91% of firms located in other parts of the state, and 85% of all firms in Georgia. Installation was the major service provided by landscape firms outside the metro area.

Exterior landscape maintenance in turn, was the major service for 94% of reporting AMA firms. Four out of five landscape firms outside the AMA reported providing exterior landscape maintenance; 87% of all landscape firms state wide provided this service.

Seasonal color installation and maintenance was offered by 76% of the metro firms and 67% of surveyed firms located in other parts of the state. This suggests that seasonal color was used more frequently to enhance the appearance of the property in the metro Atlanta than in other parts of the state.

Estimation results. Estimated relationships between independent variables and the supply of design services by landscape firms are listed in Table 1. The design services were more likely supplied by a firm as the percentage of business activity generated by landscape services' sales increased. In terms of firm size, the larger the firm, as measured by total revenue, the more likely it was to offer design services. Adding design services to the array of supplied services requires relatively little capital compared to, e.g., installation, and carries small risk for an established company.

Location in the Atlanta metro area lowered the number of firms providing landscape design services implying that firms were more likely to supply this service if located outside the Atlanta metro area. Three other independent variables: mowing, pruning, and fertilization, were included to reflect the potential link between design services and maintenance services. According to the results in Table 1, as the number of firms providing pruning service increased the number of firms providing design services also increased. Fertilization lowered the supply of design services suggesting that firms supplying such services did not include fertilization among services offered.

Table 2 shows the impact of variables on the provision of exterior installation services. According to results, there was a weak relationship between the percentage of business conducted by a firm and the supply of exterior installation services. Results suggest that there was a statistically weak, positive relationship between subcontracting and providing installation services. Location in the metro area lowered the number of firms providing installation services suggesting that firms from outside the AMA were more likely to supply the installation services.

Interestingly, firms installing landscapes predominately depend on other firms to supply plant material as suggested by the significant and positive relationship of the variable reflecting the purchase of plants by a company. Some large

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firms have their own nursery for growing 'specimen' or specialty plants that cannot be found elsewhere.

The link between installation and maintenance services was not significant for fertilization and chemical pest control, however, installation services were more likely to be offered by firms providing such specialized service as watering. As a part of installation contracts, a company may return several times after installation and water the plants which are often guaranteed in the contract. The lack of significant relationship between chemical pest control and fertilization may be related to how recently the landscape was installed; chemical pest control and fertilization are more important for established lawns and plants than for newly installed landscapes.

Table 3 reveals the impact of independent variables on the supply of maintenance services. The variable measuring experience in terms of years of the firm's existence had no significant impact on the supply of exterior maintenance service. A plausible explanation is that starting a maintenance business is relatively easy and new entrants may underbid jobs to effectively compete with established firms (4). Frequent changes in maintenance firm may contribute to the inability to find a statistically significant relationship.

Location in the Atlanta metro area lowered the number of firms providing maintenance services. Some of the commercial landscapes, concentrated in the AMA, are serviced by "in-house" crews employed by the client.

Mowing and pruning were among individual services provided by landscape firms. The impact of mowing was weak when compared to that of pruning, suggesting that the number of firms including mowing among maintenance services was lower than the number providing pruning. Mowing, the most commonly provided service, can be supplied by unskilled entrepreneurs traveling from neighborhood to neighborhood in search of a temporary job. Pruning requires more experience and knowledge than mowing and may be performed properly by skilled employees of landscape firms.

Fertilization was negatively related to maintenance services, possibly because fertilization is provided by lawn-care firms and many residential clients prefer to fertilize their own landscapes.

The supply of seasonal color was more likely among services offered, the larger was the percent of landscape services in the total business conducted by a firm (Table 4). This suggests that as a firm concentrates on providing landscape services, it attempts to diversify and offer specialty services. However, the larger the share of revenue derived from the sale of landscape services the more important was the offer of exterior seasonal color according to the results in Table 4. It is possible that some firms focus on a wider range of services and have the incentive to provide specialty services to increase revenue while using the available labor resources. It is also possible that seasonal color services are influenced by variables omitted from the specification presented in this paper.

Purchasing of plants from other firms was positively related to seasonal color service suggesting that firms rely on other firms as suppliers of specialty plants. Also, fertilization made the supply of seasonal color more likely among services offered by a firm. Fertilization may be included in the package of services of exterior seasonal color, especially because bedding plants, frequently used to enhance color, require a steady supply of nutrients to grow properly and perform well.

While the landscape industry is growing there has been little research addressing the issue of factors influencing the nature of a landscape firm. This study attempted to identify some of the factors related to four landscape services in Georgia. The differences between the metro areas in Georgia and other parts of the state, and the differences among factors influencing the supply of landscape services (design, installation, maintenance, and seasonal color) may not be applicable to other regions.

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