

The Impact of E-Commerce on Facility Management Practices:

A Survey of Fortune 500 Facility Management Organizations



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CRS Center

For Leadership and Management in the Design and Construction Industry

College of Architecture
Texas A&M University
College Station, TX 77843-3137
web: <<http://crscenter.tamu.edu>>
voice: 979-847-9357

Project Team

Project Director	Robert E. Johnson, D. Arch, AIA Professor and Director, CRS Center
Co-Investigator	Mark J. Clayton, Ph.D. Professor and Assoc. Director, CRS Center
Industry Advisor	Steve Moskowitz Director of Facility Management Conoco, Inc.
Industry Advisor	Philip Wales Principal, Corporate Infrastructure Solutions Luminant Worldwide Corporation
Graduate Assistant	Jeong-Han Woo
Graduate Assistant	Ge Xia

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The Internet and business-to-business e-commerce have grown much more rapidly than anyone guessed even five years ago, spawning potentially new ways of communication, collaboration and coordination among consumers, businesses and trading partners. However, there are many different opinions about the importance of e-commerce in facility management. The goal of this project was to develop factual information about how e-commerce is being used, who is using it, and how they expect it will be used in the future. We would like to acknowledge the support of the IFMA Foundation Corporate Circle of Contributors, without whose financial support this project would not have been possible.

KEY FINDINGS

1. How is e-commerce being used today? (see page 6)

E-commerce is just beginning to emerge as a tool that is used to help manage facilities. The most frequent application of e-commerce today is to purchase supplies and materials on the web from a specific vendor.

Almost 2 out of 10 respondents indicated that their department purchases supplies and materials on the web “a lot.” In addition to purchasing supplies and materials, the other top uses of e-commerce were accessing facilities manuals, publishing static project information on the Internet, purchasing supplies and materials through an Internet service that connects buyers and sellers, and taking interactive courses via the Internet.

2. How will e-commerce be used in the next two years? (see page 8)

Respondents have clear expectations that e-commerce in facility management will grow substantially over the next two years and that it will significantly affect facility management practices. Respondents anticipated that e-commerce use will substantially expand in every application category over the next two years. In addition, almost 1/4 said that they expected business-to-business e-commerce to change their facility management department “a lot” over the same time period. Only 2% said that they did not expect their department to change at all because of e-commerce.

3. Who is using e-commerce? (see page 7)

There is substantial variability regarding the use of e-commerce among various industry groups. Telecommunications (Service providers) and Information (Data processing and services) industry groups tended to be relatively heavy users of e-commerce. Vehicles and Investment (All securities and investment services) groups reported relatively low use activity. Additional analysis suggests that those companies who are ISO 9000 certified also may be more likely to adopt e-commerce.

4. How effective is the use of business-to-business e-commerce? (see page 15)

Respondents felt that e-commerce has not resulted in a major improvement in their ability to more effectively manage cost or time issues. However, they expect this to change in the next two years. The “payoff” for investing in e-commerce has not yet been clearly demonstrated. Some agree or strongly agree that e-commerce has helped decrease the time to complete projects (55%) or that e-commerce has decreased the cost of purchasing supplies and materials (67%). However, a majority disagree or strongly disagree that e-commerce has decreased the cost of facility maintenance and operations (51%), decreased the total annual cost of facilities (53%), decreased the cost of new construction projects (71%), or decreased the cost of space management (70%). These opinions change substantially when the next two years are considered, with a majority agreeing or strongly agreeing that e-commerce will help decrease both time and cost for all categories.

5. What are the barriers to implementing e-commerce? (see page 16)

Overall, 11% felt that implementing e-commerce was a big problem and one-half said that implementing e-commerce was somewhat of a problem. Twelve percent felt that implementing business-to-business e-commerce solutions was not a problem. The biggest specific problem in implementing e-commerce was reported to be the difficulty in integrating with legacy systems. Other top problems included lack of a budget to invest in e-commerce, hard to customize software packages, cost of software upgrades, and cost of keeping building data current.

2. Response Rate and Sample Size by Industry

Questionnaires were mailed in July, 2000 to 1,714 facility managers from Fortune 500 companies who were also members of IFMA. The sample design was created to reach respondents who tended to manage large, complex facilities and who were professional facility managers. Five hundred seventy eight usable questionnaires were returned as of October 6, 2000, for a response rate of 33.7%.

Fortune 500 industry groups have been collapsed into IFMA subgroups. A separate analysis of key variables is provided for each IFMA subgroup when the total sample size (N) for each subgroup is greater than 3.

IFMA Industry Groups			Fortune 500 Industry Groups		
SERVICES	PCT	N		PCT	N
1 Banking (Consumer, Commercial and Savings)	7%	37	Commercial Banks	6%	35
			Savings Institutions	0%	2
2 Information (Data Processing and Services)	6%	33	Computer and Data Services	6%	33
3 Utility (Energy-Related Services)	4%	21	Electric and Gas Utilities	4%	21
4 Media (Entertainment and Broadcasting)	1%	7	Entertainment	1%	5
			Publishing, Printing	0%	2
5 Health/Hotel (Healthcare, Hospitality Related)	4%	25	Health Care	4%	22
			Hotels, Casinos, Resorts	1%	3
6 Insurance (All Property, Casualty, Life and Other)	8%	46	Insurance: Life and Health (Mutual)	1%	5
			Insurance: Life and Health (Stock)	2%	11
			Insurance: Property and Casualty (Mutual)	2%	10
			Insurance: Property and Casualty (Stock)	3%	20
7 Professional (Accounting, Consulting, RE, Legal)	1%	4	Engineering, Construction	1%	4
8 Investment (All Securities and Investment Services)	11%	65	Diversified Financials	11%	65
9 Telecommunications (Service Providers)	12%	68	Telecommunications	12%	68
10 Trade (Consumer Wholesale or Retail)	5%	28	General Merchandisers	2%	12
			Specialist Retailers	1%	4
			Wholesalers	2%	12
11 Transportation (Service Providers)	2%	10	Railroads	2%	10
12 Other Services	1%	6	Mail, Package, and Freight Delivery	1%	3
			Temporary Help	0%	2
			Waste Management	0%	1
TOTAL SERVICES	62%	350		61%	350
MANUFACTURING AND PRODUCTION					
	PCT	N		PCT	N
13 Vehicles	13%	74	Aerospace	8%	45
			Airlines	0%	1
			Motor Vehicles and Parts	5%	28
14 Chemicals (All Chemicals and Pharmaceuticals)	5%	26	Chemicals	1%	7
			Pharmaceuticals	3%	19
15 Consumer (Products, Food or Related)	4%	20	Apparel	1%	3
			Beverages	1%	4
			Food	2%	9
			Soaps, Cosmetics	1%	4
			Tobacco	0%	2
16 Electronics (Including Computers and Telecom)	9%	51	Computers, Office Equipment	5%	29
			Electronics, Electrical Equipment	4%	21
			Scientific, Photographic, and Control Equip	0%	1
17 Energy (Including Mining and Distribution)	4%	22	Petroleum Refining	2%	13
			Mining, Crude-oil Production	0%	1
18 Other Manufacturing	4%	24	Pipelines	1%	8
			Building Materials, Glass	1%	6
			Forest and Paper Products	1%	8
			Industrial and Farm Equipment	1%	3
			Metals	0%	2
			Metal Products	1%	3
TOTAL MANUFACTURING AND PRODUCTION	38%	217		38%	217

3.0 Facility Characteristics

As expected, the amount of space managed by respondents is significantly larger than that managed by most IFMA facility managers (Fig 3.1).

Fig 3.1: Amount of floor space managed in gross square feet (N=532)

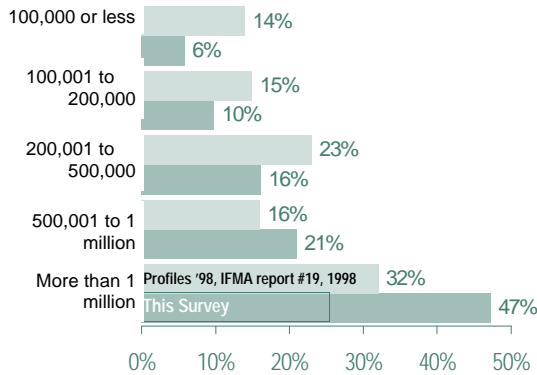


Fig 3.2: Total floor space in entire company, in gross square feet (N=353)

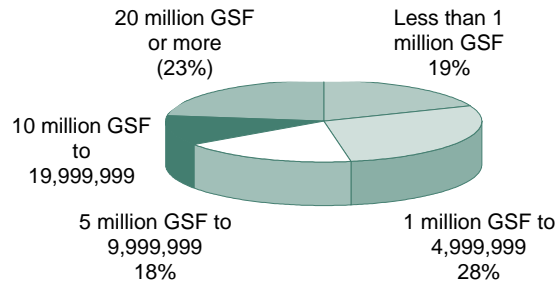
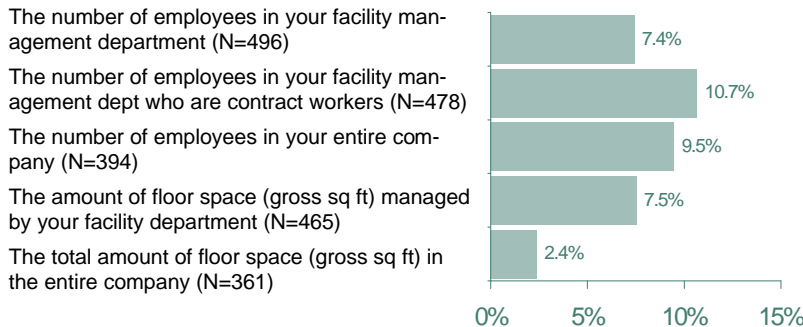


Fig 3.3: The average percent increase/decrease of the following items over the NEXT TWO YEARS



Perhaps reflecting the strong economy, respondents reported significant growth over the next two years in areas ranging from the number of facility management employees to the amount of floor space being managed.

4.0 Respondent Characteristics

Fig 4.1: Number of years respondents have been employed as a facility management professional (N=566)

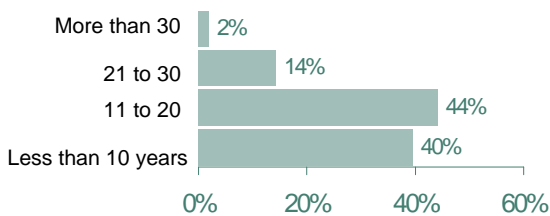


Fig 4.2: Respondents' job title category (N=557)

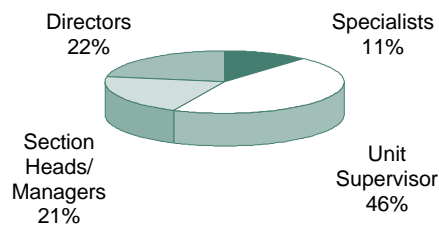
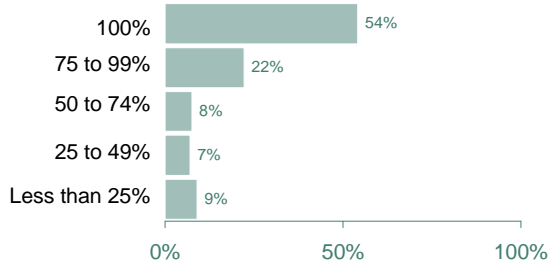


Fig 5.1: The percent of employees in facility management departments who have desktop computers (N=567)



While over half of the respondents reported that all employees in FM departments had a desktop computer, almost one out of 10 said that less than 25% of employees had a desktop computer (Fig 5.1). The results are similar for high-speed access to the Internet (Fig 5.2).

The distribution of employees and contract workers contrasted with the distribution of the amount of space managed. Despite the fact that the amount of space being managed was large (Fig 3.1), quite a few respondents reported that their departments had fewer than 25 employees (Fig. 5.4, 43%) or fewer than 25 contract workers (Fig. 5.5, 66%).

Fig 5.2: The percent of employees in facility management departments with high-speed access to the Internet (N=560)

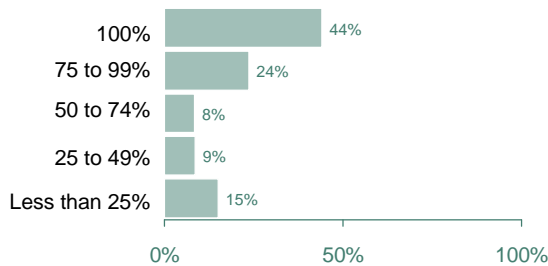


Fig 5.3: The number of people employed by the entire company (N=537)

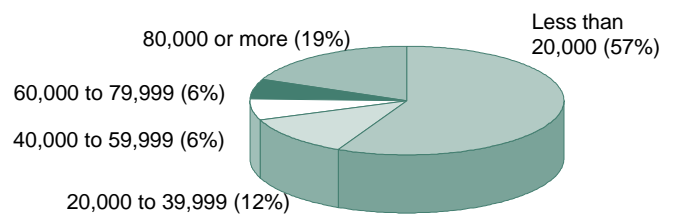


Fig 5.4: The number of regular employees in facility management departments

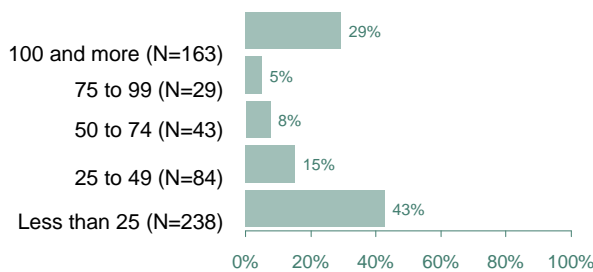
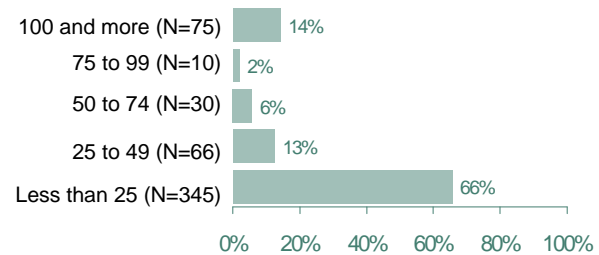


Fig 5.5: The number of contract employees in facility management departments



6.0 Planning for E-Commerce

An important indicator of interest in e-commerce is whether or not a department has formally established an e-commerce committee and whether or not the respondent was personally involved in these initiatives. About 4 out of every 10 departments had established a committee, while 60 percent of all respondents were involved either somewhat or a great deal in an e-commerce initiative.

Fig 6.1: Has your company created any formal planning group or committee whose purpose is to plan or implement an e-commerce initiative in facility management? (N=472)

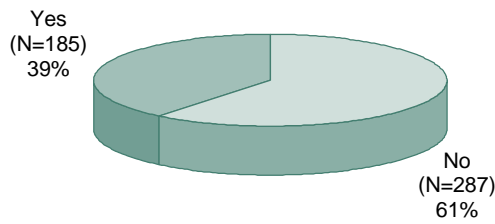
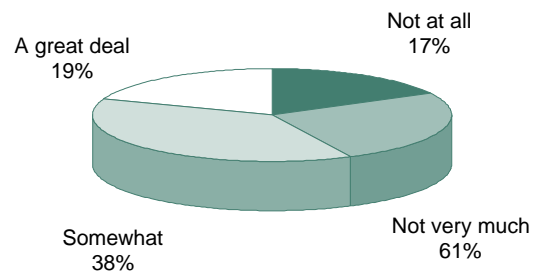
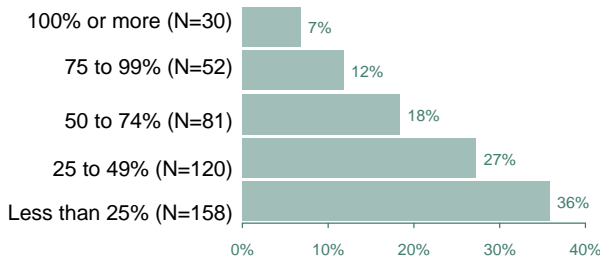


Fig 6.2: To what degree are you personally involved in planning or implementing e-commerce initiatives in your facility management department? (N=556)



7.0 Operations Characteristics

Fig 7.1: What is the approximate churn rate for the facilities that your department manages? (N=441)



As might be expected of departments that manage large amounts of space, almost 7 out of 10 respondents indicated they manage space in multiple buildings on multiple sites (Fig 7.3).

The average churn rate was 43%, with 30 respondents reporting a churn rate of over 100% (Fig 7.1). Seventy percent of all respondents indicated that their department charged end users for the use of space.

Fig 7.2: Does your facility management dept charge end users for their use of space in some way? (N=540)

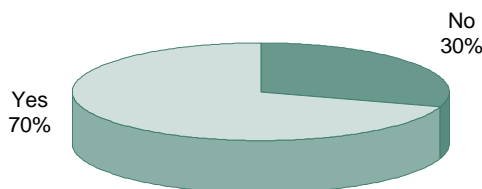
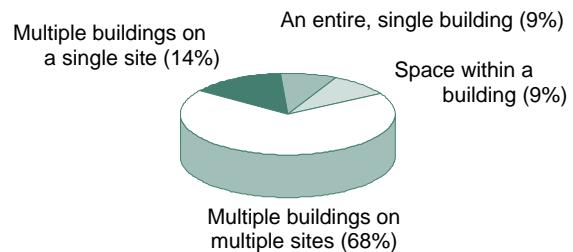


Fig 7.3: Type of Space Managed (N=560)



Many articles about e-commerce report that the cost of purchasing supplies and materials can be substantially decreased by using e-commerce. Responses to the survey confirm this, with almost 1 out of 5 respondents reporting that they purchase materials and supplies over the web (Fig 8.1). Even relatively new applications, such as the purchase of energy on the web, are beginning to be utilized. However, only 5% responded that e-commerce is used “a lot” to manage their facilities (Fig 8.2). This suggests that e-commerce is in the early stages of adoption.

Fig 8.1: How frequently does your department use the following business-to-business e-commerce applications?

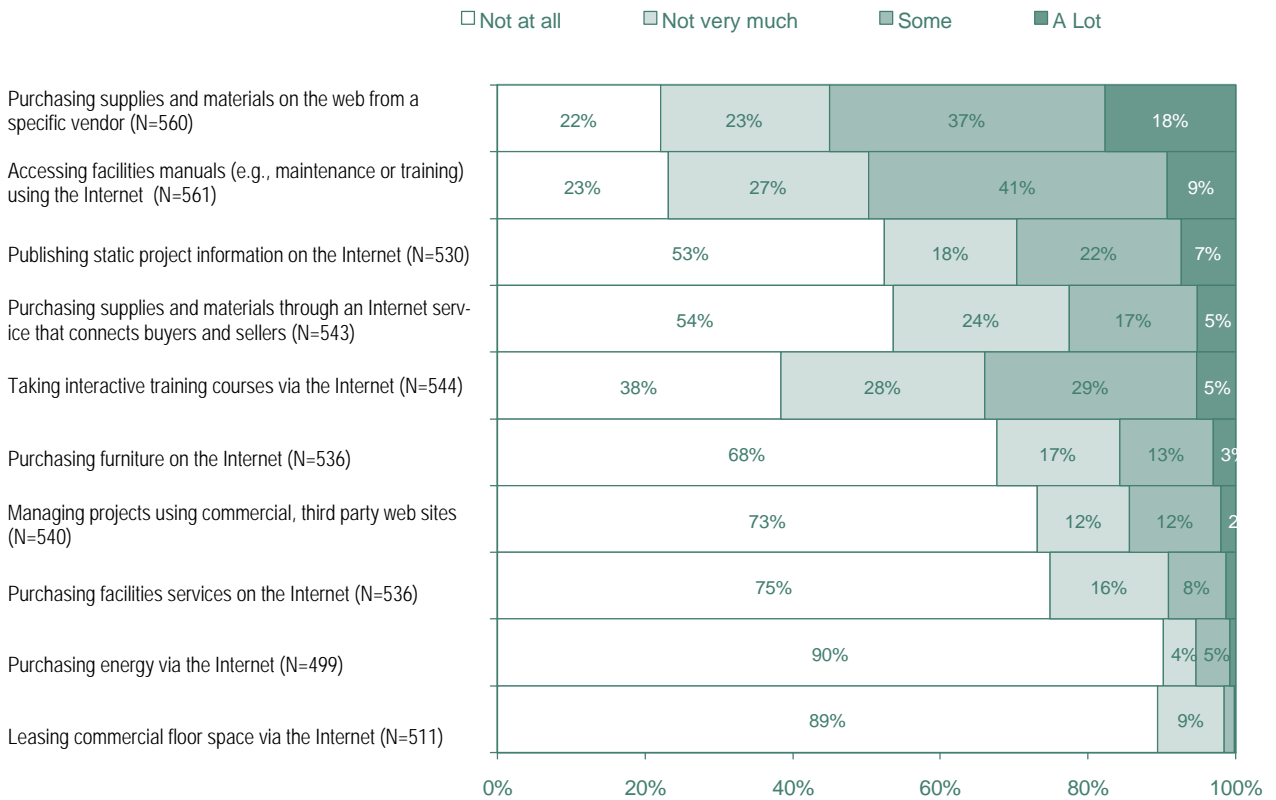
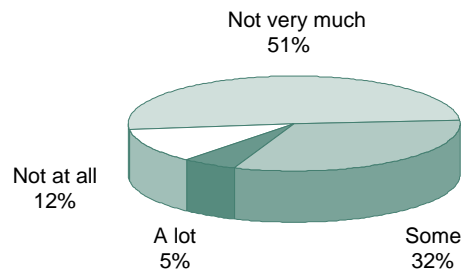


Fig 8.2: Overall, how much would you say that business-to-business e-commerce is used to help manage facilities in your company? (N=544)



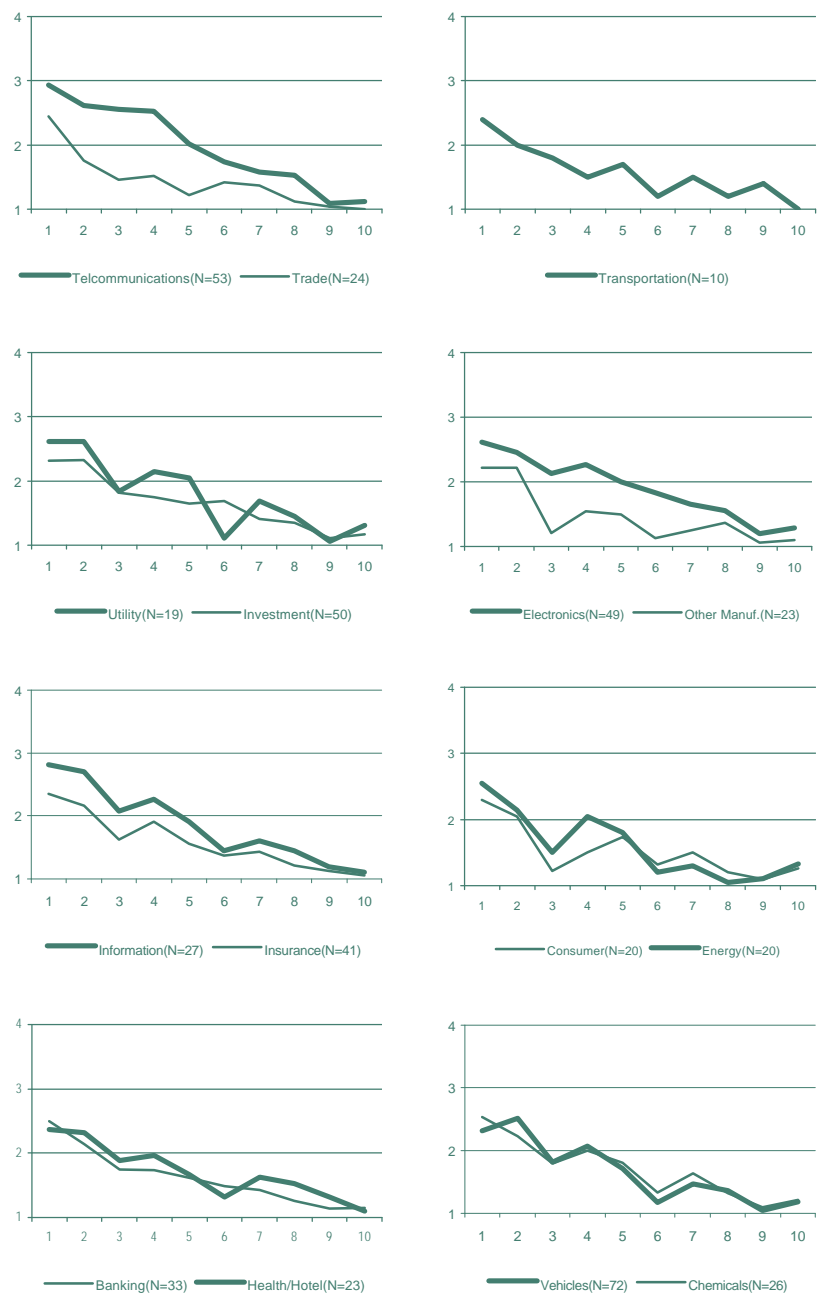
9. E-Commerce Applications by Industry Group

The use of e-commerce varied considerably among industry groups (Fig 9.1). Telecommunications (Service providers) and Information (Data processing and services) companies tended to be heavier users of e-commerce, compared to Vehicles and Investment (All securities and investment services).

Fig 9.1: Use of E-Commerce by Industry Group

KEY-Vertical axis
 4=A lot
 3=Some
 2=Not very much
 1=Not at all

KEY-Horizontal axis
 1=Purchasing supplies and materials on the web from a specific vendor
 2=Accessing facilities manuals using the Internet
 3=Publishing static project information on the Internet
 4=Taking interactive training courses via the Internet
 5=Purchasing supplies and materials through an Internet service that connects buyers and sellers
 6=Managing projects using commercial, third party web sites
 7=Purchasing furniture on the Internet
 8=Purchasing facilities services on the Internet
 9=Leasing commercial floor space via the Internet
 10=Purchasing energy via the Internet



10. E-commerce Applications in the Next Two Years

One of the objectives of this survey was to obtain an understanding of how e-commerce might be used in the near future. For the purpose of this study, “the near future” was defined as the next two years. During this time period, respondents clearly expected substantial increases in the use of e-commerce in all application categories. Four out of every 10 respondents said that they think their department will purchase supplies and materials on the web a lot, representing an anticipated increase of over 200 percent (Fig 10.1). Even categories such as purchasing energy or leasing commercial floor space on the Internet showed significant growth expectations. In addition, almost 25% thought that e-commerce would change their department “a lot.”

Fig 10.1: In the NEXT TWO YEARS, how frequently do you think your facility management department will use the following e-commerce applications?

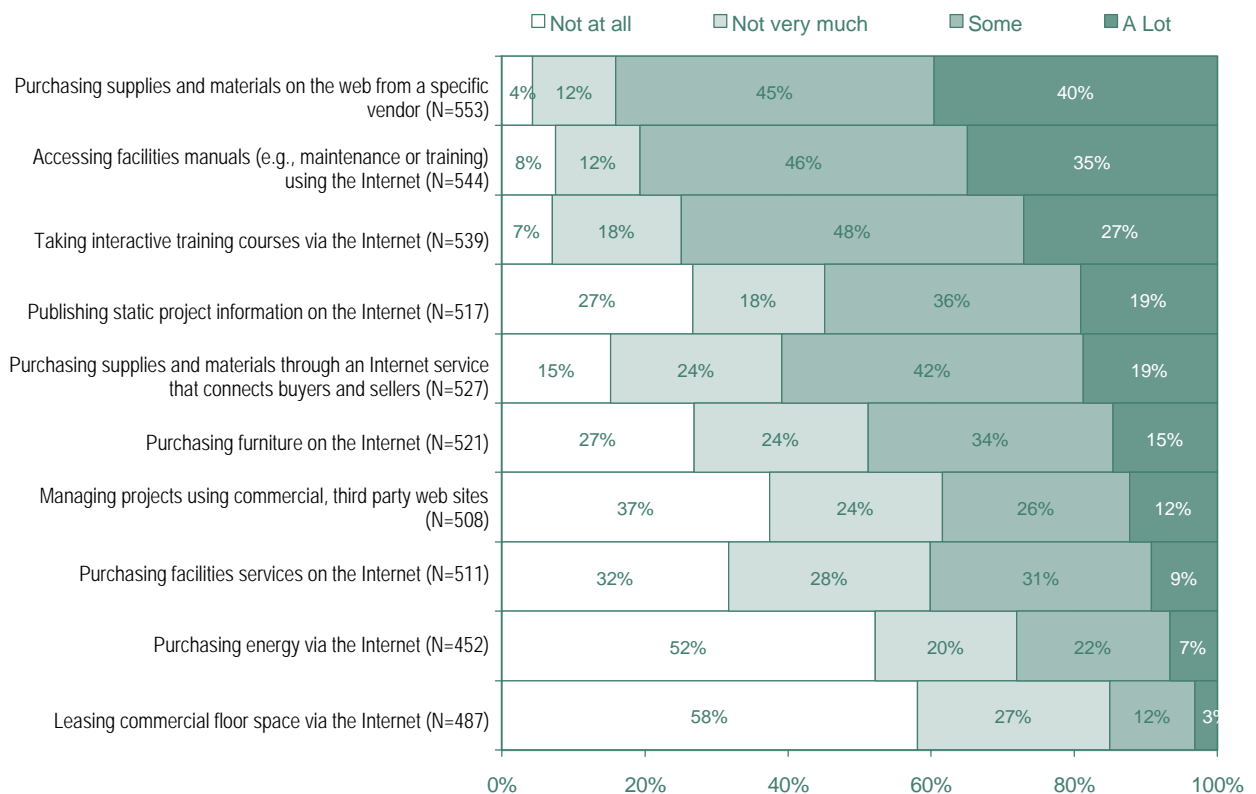


Fig 10.2: How much do you think business-to-business e-commerce will change your facility management department over the NEXT TWO YEARS? (N=556)

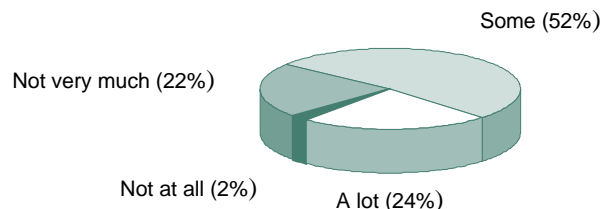


Fig 11.1: How satisfied are you with the overall performance of the following facility management functional areas?

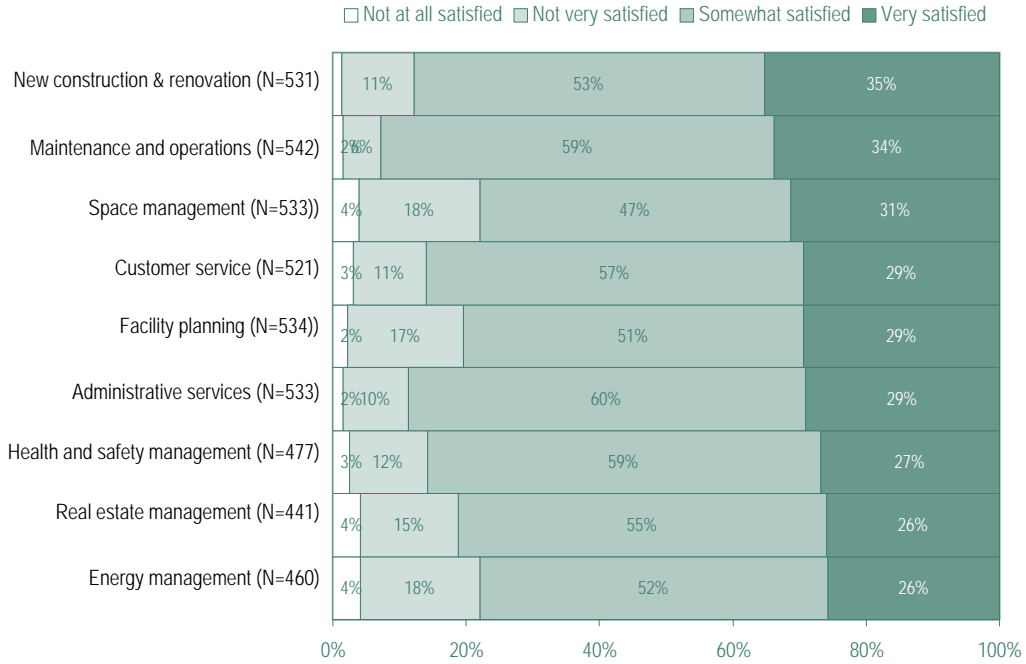
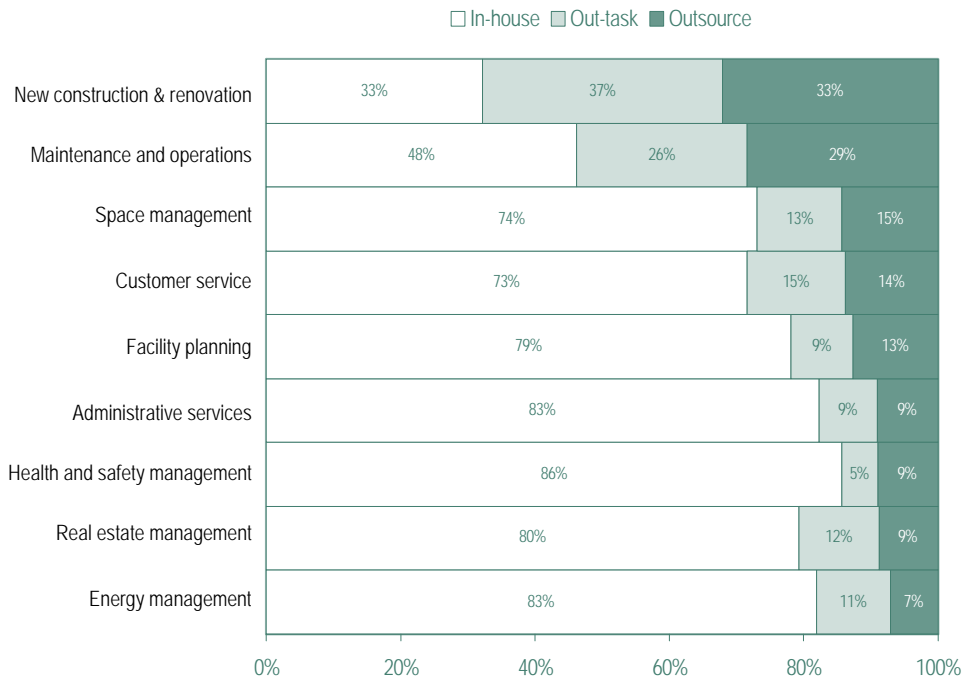
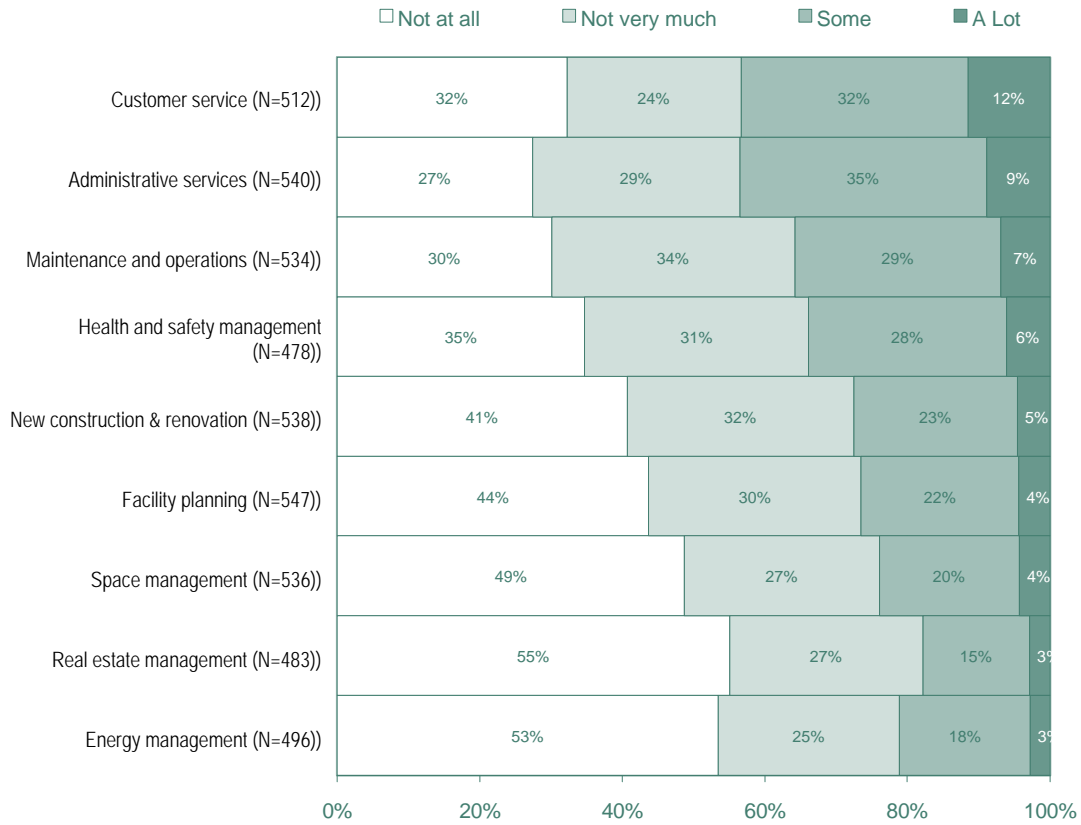


Fig 11.2: What percent of the following facility management functions in your department are performed with IN-HOUSE, OUT-TASK, or OUTSOURCE staff.



On average, customer service, administrative service, and maintenance and operations were the top three functional areas that used e-commerce applications (Fig 12.1). Yet, the overall pattern shows that some use of e-commerce is taking place in all functional areas.

Fig 12.1: How frequently do the following functional areas in your facilities management department use business-to-business e-commerce?



13. Use of E-Commerce for Functions by Group

Figure 13.1 presents the average (1=not at all, 4=a lot) that e-commerce is used for nine facility management functional areas for each industry group. According to these results, the greatest use of e-commerce is for customer service in the electronics industry group. For telecommunications, the greatest use is for administration.

Fig 13.1: Use of E-Commerce for Function by Industry Group

KEY-Vertical axis
 4=A lot
 3=Some
 2=Not very much
 1=Not at all

KEY-Horizontal axis
 1=Administrative services
 2=Customer service
 3=Maintenance and operations
 4=Health and safety management
 5=New construction & renovation
 6=Facility planning
 7=Space management
 8=Real estate management
 9=Energy management



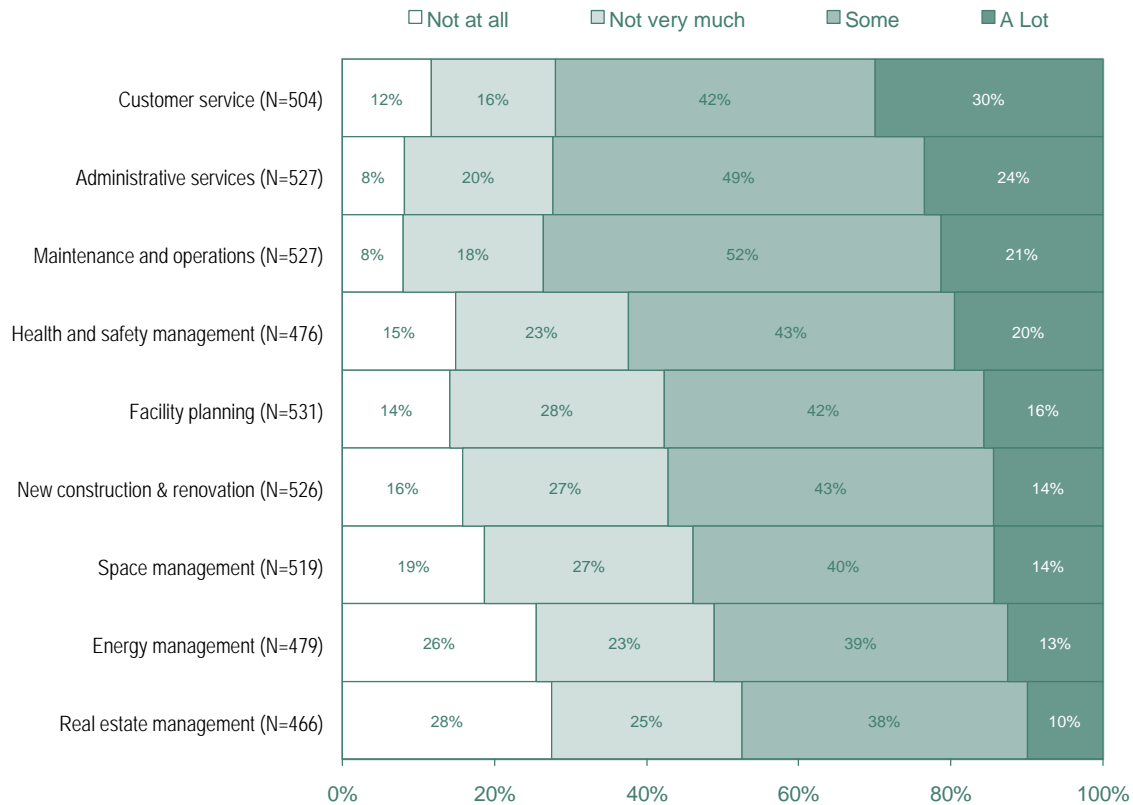
14. Use of E-Commerce in the Next Two Years

In the next two years, respondents envision significant increases in the use of e-commerce for all functional areas (Fig 14.1). Table 14.1 shows that the percent of departments that expect to be heavy users of e-commerce will more than double in the next two years.

Table 14.1: Percent using E-commerce “A Lot”

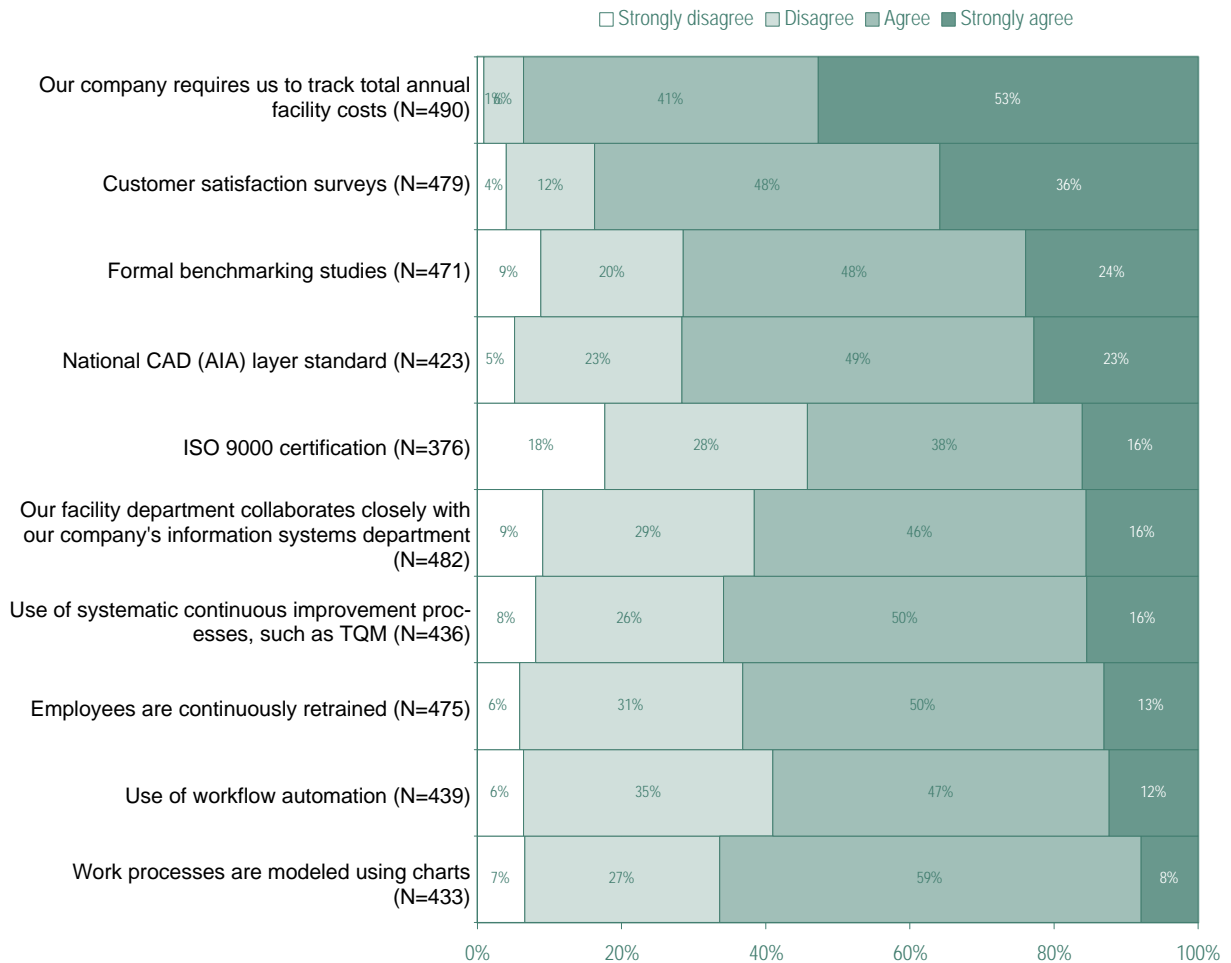
FM Functions	Now	In 2 Yrs	% In-crease
Customer service	11.5%	29.3%	255%
Administrative services	8.9%	23.5%	264%
Maintenance and operations	6.9%	21.4%	310%
Health and safety management	6.1%	20.3%	333%
New construction & renovation	4.6%	14.7%	320%
Facility planning	4.4%	15.7%	357%
Space management	4.3%	14.7%	342%
Real estate management	2.9%	10.2%	352%
Energy management	2.8%	12.4%	443%

Fig 14.1: In the NEXT TWO YEARS, how frequently will the following functional areas in your facilities management department use business-to-business e-commerce?



E-commerce could be considered one of many systematic approaches to improve work processes. Responses show that respondents in many facility management departments surveyed by this project used one or more of these work processes. A significant majority were required by their company to track total annual costs (Fig 15.1). Other heavily used systematic work process approaches included customer satisfaction surveys, formal benchmarking studies, and the use of a National CAD layer standard.

Fig 15.1: How much do you agree or disagree that your facility management department uses the following work processes?



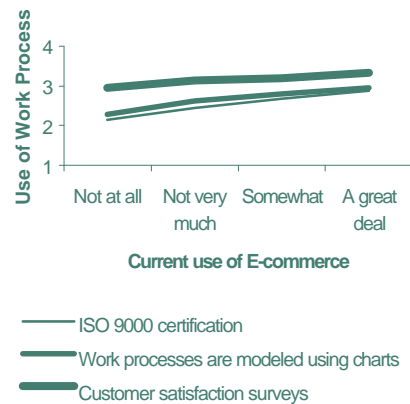
16. Work Process and Use of E-commerce

KEY-Vertical axis

1=Strongly disagree 2=Disagree 3=Agree 4=Strongly agree

Fig 16.1: Use of Work Process and Use of E-Commerce

One of the goals of this project was to determine if it were possible to identify characteristics of departments associated with the use of e-commerce. Fig 16.1 shows that the use of three work process approaches (ISO 9000 certification, work processes modeled using charts, and customer satisfaction surveys) appear to be significantly associated with firms that use e-commerce.

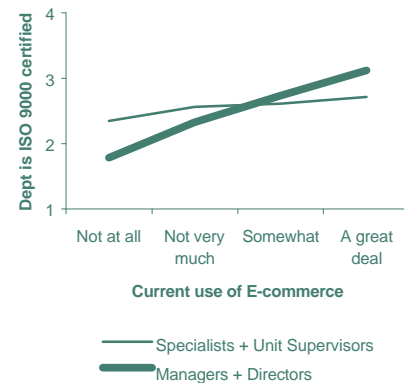


KEY-Vertical axis

1=Strongly disagree 2=Disagree 3=Agree 4=Strongly agree

Fig 16.2: By Job Classification Category

This survey was sent to facility managers who were also IFMA members. We asked each respondent for their job title, and then assigned these titles one of four job classification categories. Fig. 16.2 shows that the relationship between use of e-commerce and ISO 9000 certification is stronger for managers and directors as compared to specialists and unit supervisors.

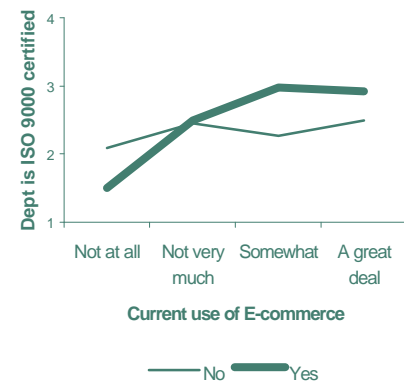


KEY-Vertical axis

1=Strongly disagree 2=Disagree 3=Agree 4=Strongly agree

Fig 16.3: By Formal Planning Group for E-commerce

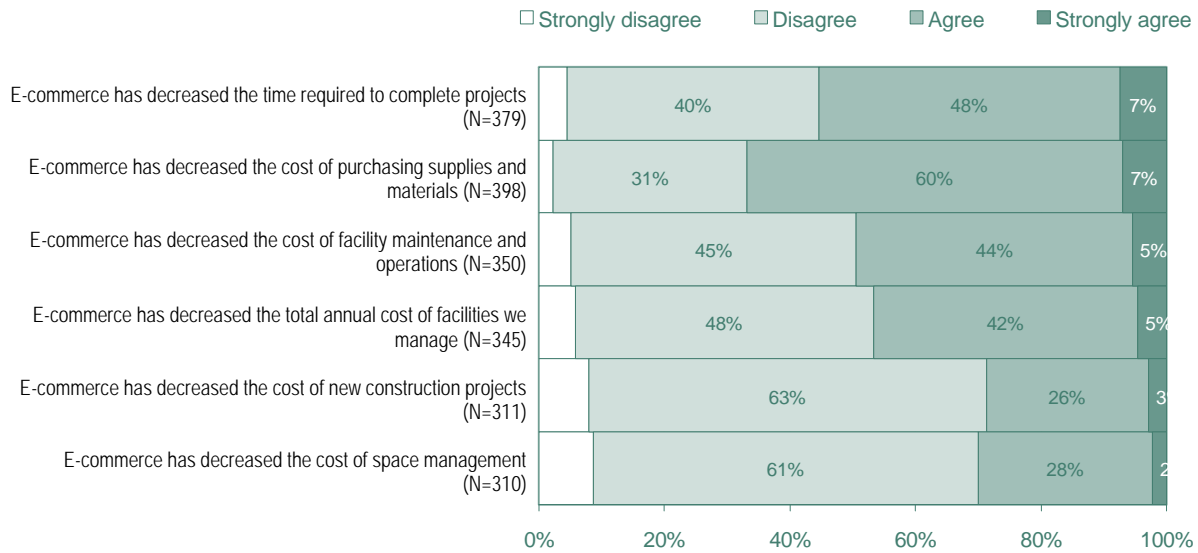
We also asked respondents whether or not their department had established a formal planning group whose purpose was to plan or implement an e-commerce initiative in facility management. As might be expected, Fig. 16.3 shows that those departments that had started a planning group and that also were ISO 9000 certified were more likely to be using e-commerce.



17. Impact of E-commerce on Performance

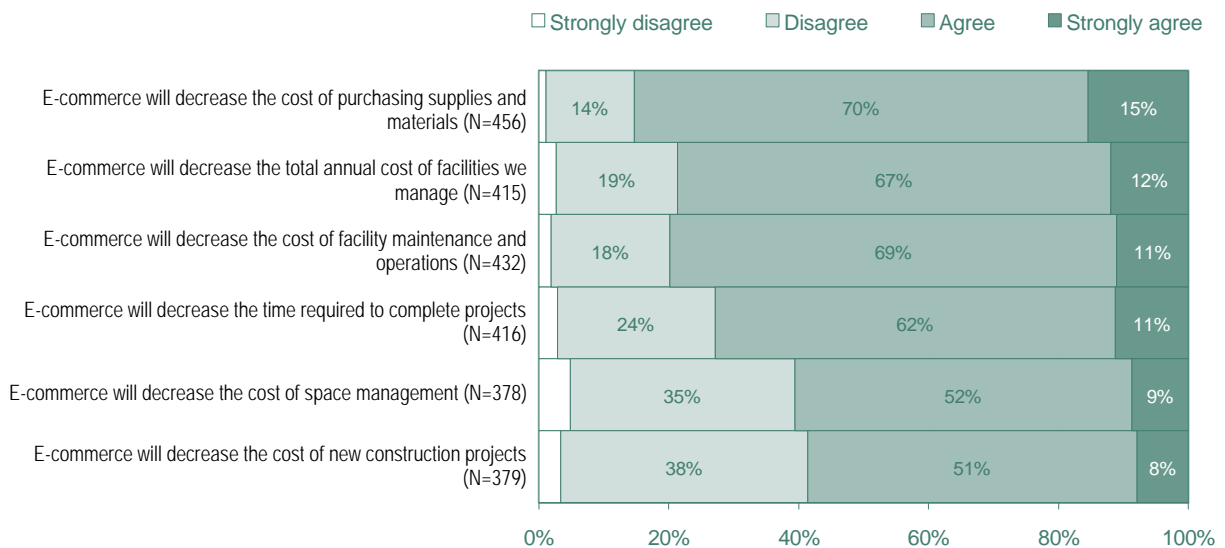
What is the “payoff” for investing in e-commerce? The survey found that most respondents felt e-commerce decreased the time to complete projects and decreased the cost of purchasing (Fig 17.1). However, for all other categories, the majority of respondents disagreed or strongly disagreed that e-commerce has been beneficial.

Fig 17.1: How much do you agree or disagree with the following statements about your facility performance?



In contrast to recent experience, it seems clear that respondents expect the situation to change in the near future. During the next two years, a majority of respondents either agreed or strongly agreed by a large margin that e-commerce will either decrease cost or decrease the time to complete projects (Fig 17.2).

Fig 17.2: How much do you agree or disagree with the following statements about your facility performance in the NEXT TWO YEARS?



18. Barriers to the Use of E-Commerce

Fig 18.1: Here is a list of problems which some feel inhibit the use of e-commerce solutions. How much of a problem is each for your facility management department?

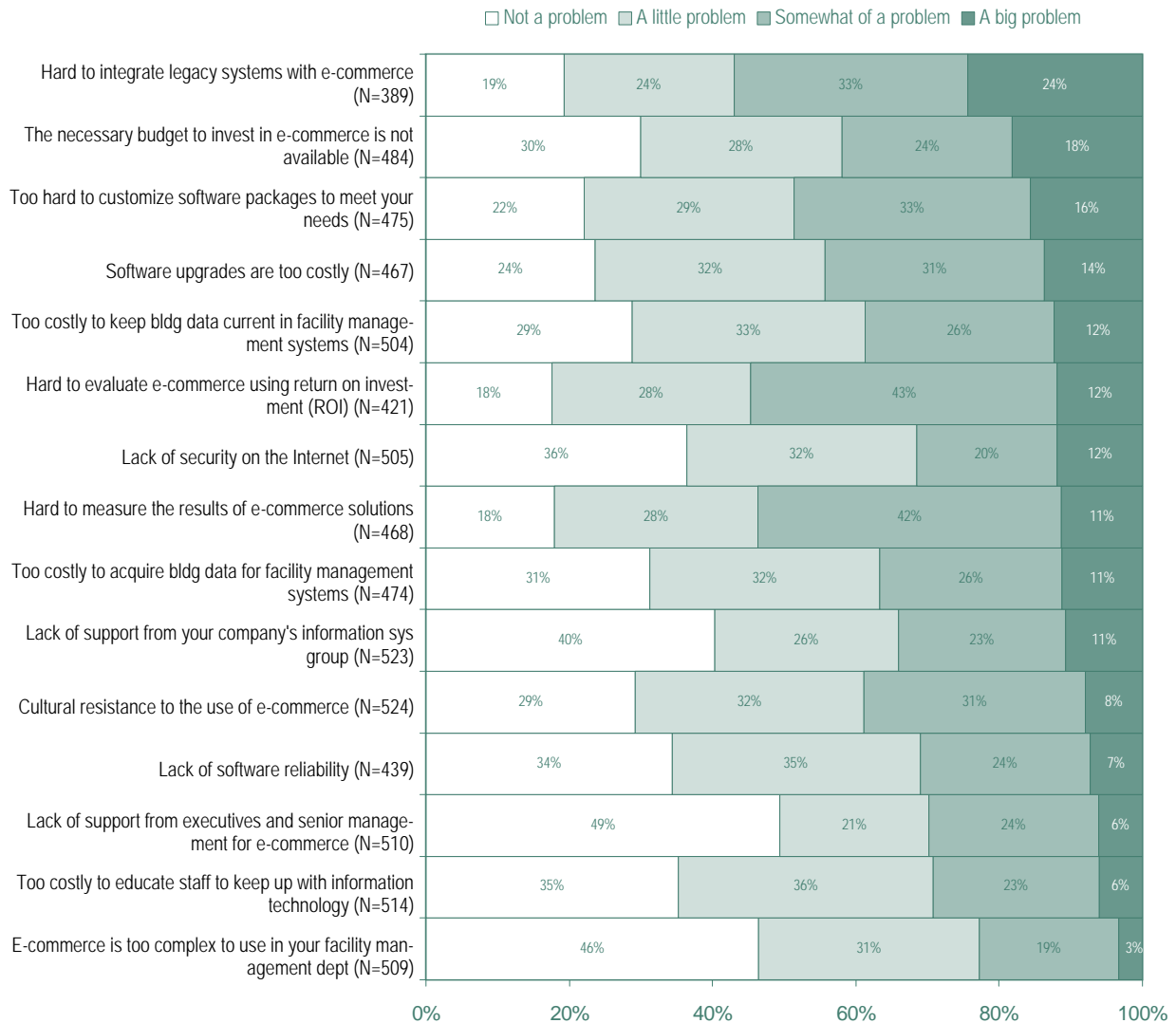
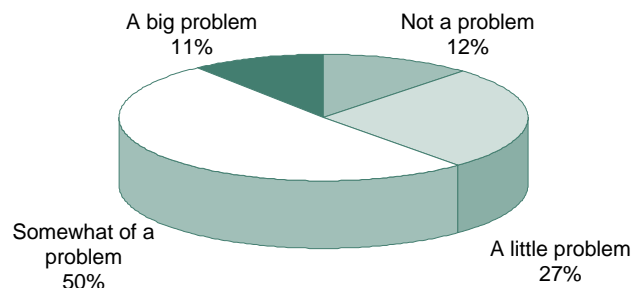


Fig 18.2: Overall, how much of a problem is it to implement business-to-business e-commerce in your facility management department (N=547)



19. Barriers by Industry Group

As can be seen in Fig. 18.2 (page 18), most respondents felt that implementing e-commerce in their department was either somewhat of a problem (50%) or a big problem (11%). More specifically, integrating legacy systems with e-commerce was top on the problem list, with almost 1/4 of respondents indicating this was a big problem. Integrating with legacy systems is important in order to take advantage of existing data. Fig. 19.1 presents the average “problem score” for each of the 15 potential problems by industry group.

Fig 19.1: Barriers by Industry Group

KEY-Vertical axis
 4=A big problem
 3=Somewhat of a problem
 2=A little problem
 1=Not a problem

KEY-Horizontal axis
 1=Cultural resistance to the use of e-commerce
 2=Lack of support from executives and senior management for e-commerce
 3=E-commerce is too complex to use in your facility management dept
 4=Lack of support from your company's information sys group
 5=Hard to evaluate e-commerce using return on investment (ROI)
 6=Hard to measure the results of e-commerce solutions
 7=The necessary budget to invest in e-commerce is not available
 8=Too costly to acquire bldg data for facility management systems
 9=Too costly to educate staff to keep up with information technology
 10=Too costly to keep bldg data current in facility management systems
 11=Lack of security on the Internet
 12=Too hard to customize software packages to meet your needs
 13=Software upgrades are too costly
 14=Lack of software reliability
 15=Hard to integrate legacy systems with e-commerce



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International Facility Management Association Foundation
1 East Greenway Plaza, Suite 1100
Houston, TX 77046-0194 USA
1-713-623-4362
E-mail: foundation@ifma.org