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E-business in Flanders: Where is the beef?

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Research report

e-Business in Flanders: Where is the beef?

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Steve Muylle

August 2009

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1 Executive Summary

During the summer of 2009, the Flanders District of Creativity sponsored a research project to evaluate the use of e-business by companies in the Flanders region and provide such companies with a framework for identifying and pursuing e-business initiatives. This report describes the project and its results.

The project was conducted by Professor Amit Basu from the Edwin L. Cox School of Business at Southern Methodist University in Dallas, USA, while serving as a Flanders DC Faculty in Residence at Vlerick Leuven Gent Management School, and Professor Steve Muylle from Vlerick Leuven Gent Management School.

The project started with the design of an online e-business evaluation instrument based on a conceptual framework developed by the researchers. This instrument was then used in workshops with key executives and e-business champions of companies in Flanders to evaluate their current e-business capabilities. The workshops were organized at Vlerick Leuven Gent Management School.

The companies that participated in the study spanned a broad range of industries, size, type, and geographical scope. They also demonstrated a broad range of e-business use and capabilities. About half of the participating companies currently engage in e-commerce and expect their online sales to grow over the next year.

The take-aways from the study were at two levels. At the level of the set of participating companies, a cross-sectional analysis yielded the following:

- The primary focus of most companies' use of the Internet is e-commerce, providing information about products and services on their Web site, and supporting online transactions.
- Few companies are leveraging the Internet through online decision support services, in areas such as product/service configuration, collaboration and business intelligence. Enhancing such capabilities can significantly help companies to strengthen their ties to customers and suppliers and thereby gain bargaining power with them.
- Even fewer companies are using Internet-based ICT (Information and Communication Technologies) to redesign or even streamline their business processes with customers, suppliers and other business partners through integration of data and applications. This represents a significant area of opportunity to make business processes more efficient, and also to make Flanders companies more attractive as business partners for companies all over the world.
- There is a substantial wealth of expertise in e-business technologies and processes in Flanders, though this is highly concentrated in a few companies, and furthermore, distributed unevenly across companies and even sectors. Better knowledge sharing and collaboration mechanisms could therefore help the Flanders region become much more globally competitive. Such mechanisms could be created by professional associations, governmental agencies (including Flanders DC), and even the Chamber of Commerce.

At the level of individual participating companies, the study provided not just a means of benchmarking their e-business capabilities and efforts with reference to the participant set, but also a means of identifying key areas of opportunity that were consistent with and supportive of their strategic priorities. To assist them in leveraging the analysis, individual reports were provided to each participating company, with specific conclusions and recommendations.

The analysis in this study revealed that support for e-business by Flanders companies varies significantly, not just across companies but also across categories of business processes. While the participating companies extensively support some transactional processes such as search, many of them have not extensively developed their e-business capabilities in other areas. This suggests that Flanders companies could benefit significantly by expanding their use of e-business beyond e-commerce across a broad range of business processes. Doing so would help them to build better relationships with customers, suppliers, and other business partners, as well as to lower costs and improve profitability. In addition, these companies could also use e-business to significantly enhance their ability to tap into new markets, both locally and globally. Particularly in the latter context, the e-business approach would be essential. The analysis also indicated that across the set of participating companies, there is a substantial wealth of expertise in e-business. Better knowledge sharing and collaboration mechanisms could therefore help the Flanders region become much more globally competitive.

In addition to the aggregate analysis described in this report, each participating firm was also provided with a customized summary of its e-business use relative to the whole group, as well as recommendations for potentially effective e-business initiatives.

2 Introduction and Project Objectives

Over the past decade, Internet and Web technologies have remade the business world. E-business has dramatically changed how firms' business processes are implemented and enhanced, altered industry structures, and shifted the balance of power between firms and their suppliers and customers (both downstream partners and consumers).

Although companies in the Flanders region vary significantly in size and scope, from multinationals to small local businesses, the availability and promise of e-business is changing the scope and reach of all organizations. Large companies are finding that their services can be customized and even "personalized" to serve very small and specialized market segments; at the same time, small businesses with traditionally local/regional scope are finding that they can reach customers all across the world that are becoming more global and discerning in their preferences, and are willing to find and obtain specialized products and services from even distant locations. Similarly, companies are casting a much broader net in structuring their supply and distribution networks, working collaboratively with companies in remote and foreign locations.

The objective of this project is to enable companies and government in Flanders to learn about the ways in which they can use e-business in their organizations, and approach e-business with greater confidence. It will potentially facilitate and motivate greater innovation, entrepreneurship and internationalization of the Flanders economy, all of which are core to the mission of the project sponsor, the Flanders District of Creativity.

The project report provides the following benefits:

1. A framework for e-business initiatives that companies can use to evaluate their business and opportunities.
2. A set of benchmarks based on the e-business framework that can help Flanders businesses to assess their existing levels of e-business use relative to other companies in the Flanders region, and to monitor their e-business innovation efforts over time.

3 Project Sponsor

Flanders District of Creativity is the Flemish organization for entrepreneurial creativity. It was founded in 2004 by the Flemish Government as a non-profit organization and enjoys broad support. Flemish businesses, academia, and public institutions use Flanders DC as a platform for cooperation in the pursuit of a more creative Flanders region.

Creativity is the key ingredient in making companies more successful and in helping regional governments ensure a healthy economy with more jobs. Flanders DC inspires creativity and innovation by:

- Learning from the most creative regions in the world;
- Igniting creative sparks in everyday life and business;
- Providing research, practical business tools and business training, in cooperation with the Flanders DC Knowledge Centre.

Districts of Creativity: Inspiration from the most creative regions

Responses to global challenges are best found within an international network of excellence. With the single aim of learning from the very best, Flanders DC aims to unite the most dynamic regions in the world within the 'Districts of Creativity' network. Every two years, Flanders DC convenes the Creativity World Forum, bringing together government leaders, entrepreneurs, and knowledge institutions to exchange ideas about how to tackle pressing economic problems and make their regions hotbeds for innovation and creativity.

Raising awareness: The best way to predict the future is to invent it

Flanders DC encourages entrepreneurs and citizens to look ahead and find creative solutions today for tomorrow's problems. Flanders DC has developed an idea-generation tool to encourage people and organizations to take the first step toward innovation. In addition, Flanders DC has run an awareness campaign entitled 'Flanders' Future' and has collaborated with national TV station één (VRT) on an idea show named The Devisers (De Bedenkers).

The Flanders DC Knowledge Centre: Academic support

The Flanders DC Knowledge Centre serves as a link between Flanders DC and Vlerick Leuven Gent Management School. Each year, the Flanders DC Knowledge Centre publishes several reports and develops various tools, case studies and courses. All these projects focus on the role of creativity in a business environment and identify obstacles to, and accelerators of competitive growth.

The Creativity Talks – brief monthly, interactive info sessions – update you on these research activities. See www.creativitytalks.be for a current calendar and subscription information.

4 Profile of Researchers



Professor Doctor Amit Basu is the Carr P. Collins, Jr. Chair in Management Information Science and Professor of Information Systems at the Edwin L. Cox School of Business at Southern Methodist University (SMU), Dallas, Texas. He was the chairman of the Information Technology and Operations Management Department at the Cox School from 2001 until 2009. He has served on the faculty of the Owen Graduate School of Management at Vanderbilt University, the College of Business Administration at the University of Maryland at College Park, INSEAD - the European School of Management, and the Indian Institute of Management at Bangalore. In addition to supervising several doctoral students in the USA, he has also served on doctoral dissertation committees at the Free University of Brussels and the University of Antwerp.

Professor Basu is a leading expert in the areas of electronic commerce, workflow and process analysis, database and knowledge-based systems, and decision support systems. He founded the International Conference on Telecommunications and Electronic Commerce (ICTEC) in 1998, and has served on the editorial boards of leading research journals such as *Management Science*, *Information Systems Research*, the *INFORMS Journal on Computing*, *International Journal of Electronic Commerce Research and Applications*, the *Information Technology and Management* journal, the *Electronic Commerce Research* journal, and the *Telecommunication Systems* journal. He has also served as a management consultant for leading companies in the USA and Europe, as well as for various foundations and government agencies.



Professor Doctor Steve Muylle is Full Professor and Partner at Vlerick Leuven Gent Management School. He serves as the chairman of the Competence Center Marketing, and director of the Executive Master Class in B2B Marketing at Vlerick Leuven Gent Management School. He has served on the faculty of the Owen Graduate School of Management, Vanderbilt University (visiting PhD student in Electronic Commerce and Internet Marketing), the Edwin L. Cox School of Business, Southern Methodist University (Research Associate, Visiting Professor), Solvay Management School (Professor), and as a doctoral fellow at the Intercollegiate Center for Management Science, Belgium (1997-2000). He also is a Professor in B2B Marketing at Ghent University.

His research interests are in the areas of management of electronic commerce, B2B marketing and supply management, and Website interface design. His work has been published in leading research journals such as the *Communications of the ACM*, *Decision Support Systems and Electronic Commerce Journal*, *Electronic Commerce Research and Applications*, *IEEE Computer Society Proceedings*, *Information & Management*, and *MIT Sloan Management Review*. Prof Dr Steve Muylle has received multiple awards for his research and teaching. He worked with many companies, both large organizations and medium-sized enterprises, on various education and research projects, and teaches frequently in executive education programs for leading multinational companies across Europe.

5 Theoretical Foundations

The conceptual framework and approach underlying this study were the result of a decade of research involving a variety of firms across the globe. At the core of the research is the Electronic Commerce Architecture (ECA), which enables business, technology providers, and intermediaries to examine their roles in the online environment. Using the ECA, the researchers have explored how firms could support trade processes online, both conceptually and empirically. They have developed a typology of e-business processes that firms of all types can use to plan specific e-business initiatives to improve their performance. This approach has been used to assist various established firms in planning for creating business value through e-business. To further validate the robustness of the approach, the researchers have also examined online organizations such as electronic intermediaries like marketplaces and exchanges, over several years. In these studies, the researchers have worked with senior management and engaged business directors across geographical regions in sets of workshops to identify sustainable initiatives, and found that this framework is both intuitive and useful as a basis for management planning and analysis.

5.1 The e-Business Value Proposition

Electronic business (e-business) can be defined as the use of open networks such as the Internet and the World Wide Web environment for business processes. This approach provides a number of significant value drivers over traditional business, such as:

- **Removal of physical and temporal barriers:** online business processes can be conducted at any time from any location that has network access. This enables organizations to effectively utilize a mobile and distributed workforce and also access a global market for customers, suppliers, and business partners.
- **Information richness:** online business processes require all the information relevant to these processes to be captured, transmitted, and stored digitally. Consequently, organizations have richer information about these processes and the entities involved, which can be leveraged for better business decisions in processes ranging from product development and operations to marketing, sales, and logistics.
- **Responsiveness:** The accelerated pace of online transactions and processes enables organizations to respond faster to new information and changes to both internal and external conditions.
- **User self-service:** In traditional business processes, organizations have to devote significant human resources to capturing data and managing interactions with entities such as customers, suppliers, partners, and even employees. In the e-business approach these entities can themselves provide the relevant data and interact with the organization electronically. This not only saves costs but actually results in more robust, efficient, and reliable processes, with higher levels of user satisfaction.
- **Institutional memory:** Since the information flows in the e-business approach are conducted electronically, they can be easily recorded and stored, thereby creating a rich information repository and cumulative knowledge base that facilitates learning to improve business processes and decision making.
- **Customization and Personalization:** Traditional business processes rely significantly upon economies of scale, thereby motivating standard products and services. On the other hand, the e-business approach enables organizations to provide customized products and services. In fact, online customization can even be extended to personalization to individual customers. This can not only lead to higher satisfaction but also to increased profitability and revenues.

5.2 The Conceptual Framework

The conceptual framework involves four major steps that make up the planning phase for e-business projects using existing products and services, processes and markets:

1. Identify potential initiatives.
2. Analyze the functional scope of each.
3. Analyze the sustainability of each initiative's benefits.
4. Prioritize the initiatives.

In addition to the planning phase, the e-business development process also includes phases for feasibility analysis, implementation, testing, deployment and performance review. The overall process can be set within a development life-cycle spanning all these phases. This study focuses on the four planning steps with the assumption that the later phases can be executed using established methods.

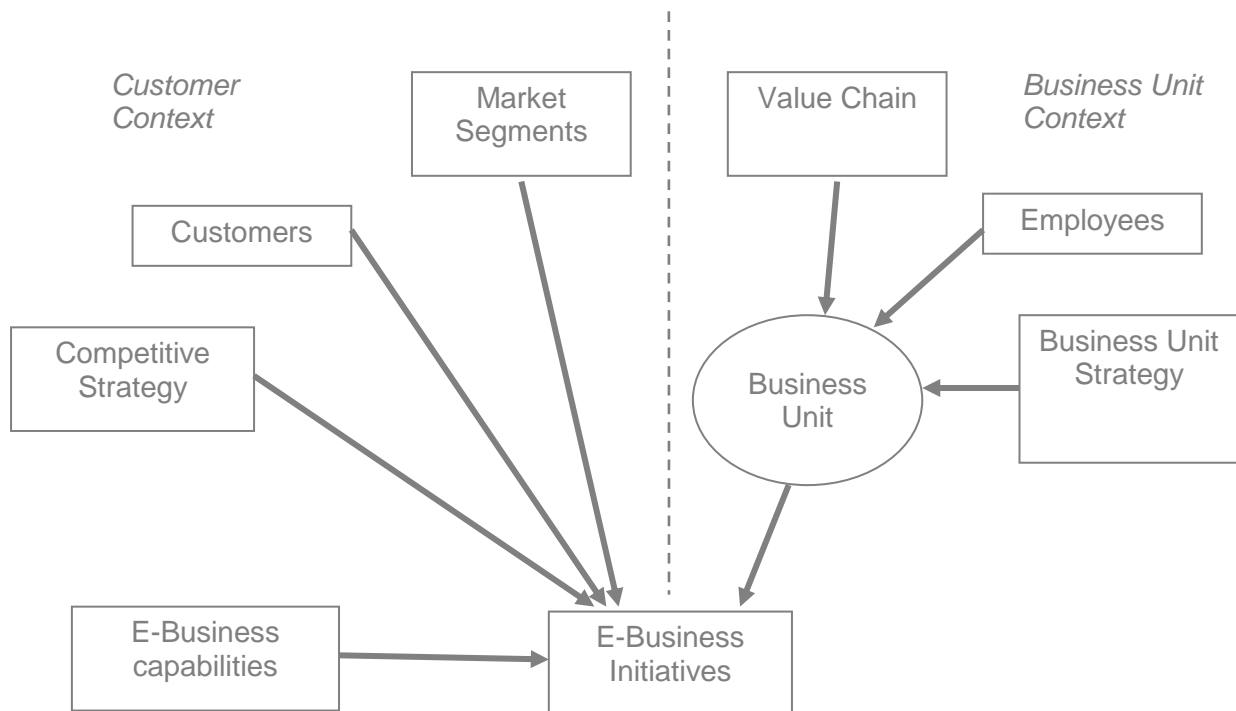
5.2.1 Identify Potential E-Business Initiatives

Companies can gain two fundamental types of benefits from e-business: first, value creation or value enhancement for one or more of a firm's stakeholder groups; and second, lower costs of providing goods and services to the marketplace.

Customers are a driving force for value creation. Managers can use customer needs to identify opportunities for leveraging e-business to enhance the firm's customer value proposition and to help define specific market segments with distinct priorities.

To create customer value, firms should focus on the needs of individual customers as well as market segments and target industries, and not on product- or commodity-based priorities of the internal organization. For example, the customer needs of firms such as Dell or HP tend to be determined by specific industry verticals; e-business initiatives serving the defense sector will be quite different from those aimed at the education sector. Furthermore, within each customer segment, firms should adopt a process perspective in supporting the needs of different decision-makers. For instance, a customer's R&D group may benefit from information that spans the supplier firm's R&D, production and marketing groups – information that can be integrated via e-business mechanisms (rather than traditional functionally defined information sources). A case in point is a chemical company that provides a cosmetics maker's R&D personnel with information on the packaging options for chemical supplies.

Value creation from e-business can be expanded by considering the needs of other stakeholders besides customers. Key components of a company's value chain, including suppliers, distributors and shipping partners, also influence the value proposition of e-business initiatives. Firms' internal structures tend to be well aligned with their interactions with these stakeholders. For example, the operating units of a computer firm may be organized along product lines such as workstations, servers, printers and imaging and storage devices, each with their own supply chains and partner relationships. Creative e-business innovations can lead companies to improve existing value chain interactions and possibly even to a reconfiguration of the value chain. For example, a major convenience store chain has introduced a Web-based system that allows its stores to factor in demand trends and place online orders for beverages, rather than relying on fixed orders or having delivery trucks deal with fluctuating demand. And large retailers such as Carrefour and Kroger have used online marketplaces to not only restructure their supply chains, but also to change their relationships with suppliers and competitors alike who use the same marketplaces.



A challenge that any company faces in reshaping established customer-facing processes is their impact on channel partners. Many managers fear that e-business will cannibalize existing channels. A smarter approach, however, is to evaluate e-business initiatives holistically, to extract their value contributions to customers *and* channel partners. This is key to making e-business a “yes-and” complement to existing business relationships and processes rather than a “yes-but” proposition.

E-business projects can also create value for internal stakeholders such as employees. For instance, e-business can foster knowledge creation and collaboration via dynamic organizational communities. An example is an online forum for improving a firm’s environmental impact through innovative production and office processes. Through this forum, global teams could collaborate on environmental projects based on common interest and disband once targets are hit.

As with value creation, cost savings through e-business too can be analyzed using the framework. Yet the cost perspective is more “inside-out” than “outside-in.” That is, opportunities for savings are more readily identified for internal business processes and functions, because cost reductions are an area where the interests of the firm may differ from those of its external stakeholders. An important consideration is the potential impact of cost reductions on the value proposition of key stakeholders, such as customers, suppliers, business partners, shareholders and employees. For instance, an e-business effort to enable customer self-service would save money, but it would be inadvisable for key customers with high service expectations. However, customer self-service could be a very effective method for engaging new and smaller customers over a larger geographical range – customers who might otherwise be inaccessible. This example also demonstrates how cost-saving initiatives sometimes can be combined with value-adding features to make them more attractive.

Whether the benefits of e-business lie in value creation or cost savings, the e-business planning process should be part of a firm’s strategic planning process rather than a separate effort. Projects with a customer focus should be based on the relevant competitive strategy (such as cost leadership or differentiation), while value-chain initiatives should be based on the strategy of the relevant business unit(s) with respect to business processes such as sourcing, technology/product development and staffing.

Exploring New Business Opportunities

Managers can apply the e-business planning process to a company's existing products and customers. However, e-business can also create opportunities for completely new products and markets.

Adding Information Features

E-business can enhance products and services with informational capabilities that increase their effectiveness and value. For example, some chemical companies place Web-enabled sensors in product containers located at customer sites so that they can monitor and replenish product levels, minimizing or even eliminating customer wait times. Similarly, appliances such as refrigeration and security systems can include tiny Web servers that can monitor device status for remote monitoring and updates by service organizations and even customers.

Selling Information as a Product

E-business results in information being captured, stored and organized electronically, which can be the basis for new business opportunities. Some of the information may itself have market value, as additional products that a company can sell. For instance, manufacturers have to maintain material safety data sheets (MSDS) on all substances used in their products, and materials suppliers must provide MSDS information when they sell their products. MSDS Solutions organizes the information in these data sheets and sells it as a service. Another example is the financial analysis data traditionally used by investment managers to make investment decisions. Companies such as Morningstar use online channels to offer such information to self-directed investors or to people who want the ability to validate the recommendations of their investment advisors.

Selling Knowledge as a Product

Another source of opportunity for new business is from leveraging a company's existing business knowledge and expertise for novel products or services. For example, apparel maker Fruit of the Loom had developed expertise in setting up e-commerce Web sites for small "Mom and Pop" retailers such as independent apparel shops and T-shirt shops, which lacked the expertise to develop e-commerce systems but formed a significant portion of the company's downstream partners. By developing the Web sites and linking them to its production and distribution systems, Fruit of the Loom helped not only its customers but also its own internal processes. The expertise that the company gained in dealing with this type of value chain has enabled it to market these services to other companies in the garment industry through its FTL Systems subsidiary. Another example is American Airlines, which leveraged its expertise in yield management to spawn a new business, which it spun off as Sabre Holdings.

Finding New Markets

E-business can be used to extend existing product and service lines to new customers, such as people who have never physically visited a company but become aware of it through Web searches. In this regard, it is important to distinguish between entities that are already aware of the company and its offerings, even though they are not (yet) customers, and entities that are unaware of the company. The latter group has to be reached using means that go beyond a corporate Web site. For instance, a company could set up an online community site focusing on a particular type of product and service, through which it can make visitors aware of its activities. To be viable, the site probably would have to include information about competing, complementary and related products.

In identifying and reaching new markets with e-business, companies can also exploit the so-called *long tail*. This term refers to the potentially large number of entities that might be attracted to a company's products and services, but are not serviceable at profitable levels in a traditional business environment. An example is the small- and medium-sized enterprise (SME) market that historically has not been able to afford ERP products. But because e-business can significantly lower the costs of reaching and serving customers, ERP vendors such as SAP and Oracle have been able to enter the

SME market in recent years, offering their software to formerly marginal customers through an online application service provider (ASP).

5.2.2 Analyze the Functional Scope of E-Business Initiatives

The researchers have developed a typology that can be used to plan the functional scope of each e-business proposal for any firm. “Functional scope” is the set of business processes a company can support for a particular e-business initiative. The typology is organized at two levels: the first is an infrastructural level of network services, and the second is a collection of three types of processes.

Trade Processes	Decision Support Processes	Integration Processes
Search Authentication Valuation Payment Logistics & Customer Services	Configuration Collaboration Business Intelligence	Data Application
Network Services		

Network services

At a firm’s underlying network layer are services and capabilities that form the basis for e-business. These include basic communication services and infrastructure components such as security and reliability. At this level, the opportunities for improvement mostly lay in efficiency and reliability rather than a quest for sustainable competitive differentiation. However, an efficient and effective network infrastructure is often a necessary condition to realize business value through support for e-business processes.

e-Business Processes

Companies can seek opportunities to exploit e-business in three types of processes: trade, decision support and integration processes.

Trade processes

These processes support buying and selling online. They can both add value and save costs for business transactions. Specific trade processes include:

- **Search** for products, buyers and sellers.
- **Authentication** of products, buyers and sellers.
- **Valuation** of products.
- **Payment** and payment clearance.
- **Logistics** such as delivery and installation, and **customer service**.

Decision support processes

These processes enable a firm to obtain information and use analytical models that enhance its ability to make effective business decisions. Decision support processes also allow a firm to interact with other firms in ways that help all of them make better decisions. Specific decision support processes are:

- **Configuration**, via configurator tools, electronic requirement determination tools and sharable Computer-Aided Design (CAD) tools.
- **Collaboration** with tools such as conferencing, white-boarding, electronic brainstorming and shared data repositories.
- **Business intelligence**, conducted with analytical tools.

Integration processes

These processes help firms integrate their information systems to enable automation of tasks across different component information systems. This includes vertical integration between a firm and its suppliers or customers/distributors, and horizontal integration between a firm and horizontal partners (for example, by creating integrated catalogs of products or consolidated procurement systems). Specific integration processes include:

- **Data integration**, allowing a firm's software applications to access its partners' databases, possibly across heterogeneous and autonomous database structures, software and hardware platforms.
- **Application integration**, involving integration of both data and applications (for example, order, payment, accounting, inventory and workflow systems) through the use of technologies such as object-oriented systems and eXtensible Markup Language (XML). (These mechanisms are often described as "web services.") The role of application integration increases when firms adopt computer-based systems for internal integration, such as enterprise resource planning (ERP) systems.

When managers have categorized e-business initiatives according to their functional scope, they can qualitatively identify the potential business value and cost savings. Yet it is not always feasible to quantify e-business efforts – or attain the ideal of monetizing them. Thus the e-business evaluation process needs to be flexible and adaptive, and not necessarily limited by criteria such as return on investment (ROI).

While the framework is not technology-specific, it should be noted that online capabilities in many of the process categories have been enhanced significantly in recent years through the evolution of Web 2.0 technologies. A key benefit of these technologies is that they lower the barriers for the implementation of the sophisticated functionalities needed to support the above processes in Web-based systems. For example, social networking technologies facilitate search, authentication, customer service, collaboration, and business intelligence. Likewise, Web services facilitate integration capabilities

5.2.3 Analyze the Sustainability of Benefits from E-Business Initiatives

E-business typically involves the use of software and systems that allow external parties, including competitors, to gain visibility into a firm's operations. Thus innovations involving e-business interactions can be easily emulated and even improved on by competitors, often at lower cost. This "curse of the bleeding edge" is possible with any innovation but is particularly onerous in the e-

business context. For that reason, it is important to assess the sustainability of any competitive advantage that might be derived from an e-business project. For the most part, sustainability is derived from two key factors:

- **Barriers to entry** and imitation, including legal restrictions, superior access to inputs or customers, market size and scale economies, and intangible barriers such as historical circumstance.
- **Early mover advantages**, due to learning costs, network externalities, established reputation and buyer uncertainty, and partner switching costs.

Six features of e-business initiatives can be considered to assess their sustainability:

1. **Positive network externalities.** Sustainability is enhanced if an initiative's features become more valuable as the number of participants grows. In that case, the size of the newly formed network creates switching costs for users. Being the "first mover" can be significant in building a positive network effect, as seen, for example, in Yahoo! Auctions' market leadership over eBay in Japan. Yahoo!'s online presence as Japan's prime Internet access provider and electronic commerce portal greatly reinforced its auction position, in contrast to eBay's dominance in many other markets.
2. **Proprietary database.** Companies can protect proprietary customer data in e-business initiatives much more effectively than software functionality. In fact, companies are often required by law to protect personal data. Also, customers resist sharing personal and private data with multiple companies, particularly if they are satisfied with their current providers. The firm that first attracts a customer and extracts personal data has in effect built switching costs. When this data asset is enhanced by positive network externalities, "stickiness," and thus sustainability, is the result. For example, Amazon.com's recommendation system uses customer profiles and data on online behavior to suggest products. The more a person (and others) uses the recommendation system, the more accurate it gets, and the greater is the perceived switching cost.
3. **Proprietary knowledge base.** If an e-business initiative also exploits proprietary intellectual assets, then competitors have a harder time emulating it as long as the knowledge is protected. An example is the online matchmaking service eHarmony.com, which boasts a "patented Compatibility Matching System" based on surveys completed by subscribers. The system leverages eHarmony's proprietary profile-matching algorithms.
4. **Proprietary hardware and/or software.** It is possible in some specialized contexts for companies to exploit domain expertise that is embedded in particular hardware or software. This expertise can be protected even if the software has a public user interface. For example, computer firms such as IBM and HP allow clients to use the Web to access their leading-edge hardware products to test software applications
5. **Personalization.** An e-business initiative can be made sustainable if it exploits personal information to provide personalized service. For example, while several logistics firms allow customers to track shipments online, FedEx's InSight is a Web-based business tool that proactively tracks customer shipments, send automatic notifications of critical shipping events, offers precise shipment status summaries based on address and/or account number (instead of tracking numbers), and recommends actions to expedite delivery.
6. **Exclusive partnerships.** If a project involves exclusive partnerships among multiple firms, forged through a combination of mutual value and contractual obligation, then users would

incur switching costs in moving to another provider and having to reestablish several relationships. Similarly, potential competitors would face increased entry barriers. An example is Tradcom.com, which was founded by four complementary suppliers, each the market leader in a specific maintenance, repair and operating (MRO) segment in Europe. This joint venture offers integrated transaction functionality for more than a million products to industrial buyers.

5.2.4 Prioritize E-Business Initiatives

E-business initiatives often require a variety of information technology (IT) resources. These resources can be considered in terms of a three-level IT architecture consisting of applications, middleware, and infrastructure. For example, a company that wants to provide its distributors with online production schedule details may have to consider infrastructural enhancements in the security of its Web traffic, integration with the manufacturing database and access to a production planning application. The collective value of this proposal will depend on existing components, and the incremental benefits may be hard to separate.

Since several e-business proposals may well be under consideration at the same time, perhaps by different groups or units within the same organization, executives must be able to choose among them. Traditional cost-benefit analysis can be applied to e-business initiatives and combined with a portfolio planning approach for prioritizing and scheduling projects. In the e-business context, however, it is particularly important to consider the scope of each project and its interdependence with other activities within the firm.

Each level of the IT architecture depends on elements at lower levels. An application layer proposal could hold great promise, but it might not be feasible without first implementing required middleware and infrastructure components. As a result, an infrastructure project such as digital certification for online security may take precedence over an e-commerce initiative. Similarly, a manager considering an application that includes middleware enhancements (such as a new database management system) needs to factor in other applications that could potentially benefit from that middleware. Another possibility is that two projects involving common infrastructure or middleware enhancements may not be very attractive individually, but if both are pursued, the synergies in the infrastructure and middleware may more than justify their selection.

6 Methodology

The project consists of the following steps:

1. The design of an online e-business evaluation instrument based on the above conceptual framework;
2. Workshops with key executives and e-business champions of companies in Flanders to evaluate their current support for e-business activities using the above instrument;
3. Analysis of the workshop data, and collection of additional data by an online survey;
4. Preparation of a project report to present the results of the study and directions on implementing these ideas.

The workshops were organized by Flanders DC and Vlerick Leuven Gent Management School, to which key executives and e-business managers of companies in Flanders were invited. At these workshops, the researchers explained the potential value of the project to the participants, reviewed their e-business framework, and gathered information on the Flanders companies' business and processes with respect to their e-business adoption and support, using the online e-business evaluation instrument. The participants provided online input while being walked through the e-business evaluation instrument.

The data collected through the workshops and online surveys was analyzed by the researchers to offer aggregate insights through a project report. In interpreting the results of this study, it should be recognized that they are based on the analysis of a select group of companies. While the companies span a broad range as discussed in the report, the results should not be interpreted as a comprehensive analysis of the Flanders region.

In addition to the aggregate analysis, each participating firm was provided with a summary of firm-specific recommendations.

7 Findings

The responses from all the participants in the workshops were compiled in terms of a set of composite measures in each category of the e-business framework, as shown below.

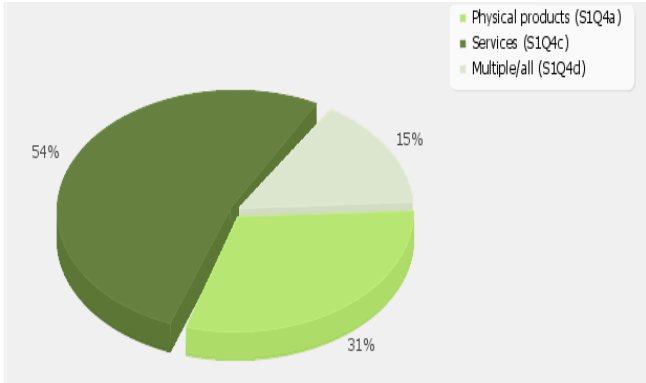
Trade Processes	Variable	Description
Search	SCUST	Helping customers find your firm.
	SSUP	Helping suppliers find your firm.
	SPROD	Helping customers find your products.
Authentication	AORGCUS	Authenticating your firm to customers.
	ACUSORG	Authenticating customers.
	AORGSUP	Authenticating your firm to suppliers.
	ASUPORG	Authenticating suppliers.
Valuation	VCUST	Valuation mechanisms for customers.
	VSUP	Valuation mechanisms for suppliers.
Payment	PCUST	Payment mechanisms for customers.
	PSUP	Payment mechanisms for suppliers.
Logistics	LPHY	Logistics support for physical products.
	LDIG	Logistics support for digital products.
	LSERV	Logistics support for services.
	LORDER	Logistics support for order processing.
Customer Service	LSUP	Logistics support for suppliers.
	SUPCUS	After sales customer support.
Decision Support Processes	Variable	Description
Configuration	DCONCUS	Configuration tools for customers.
	DCONSUP	Configuration tools for suppliers.
Collaboration	ColIINTIS	Internal information sharing.
	ColICUSIS	Information sharing with customers.
	ColIDISTIS	Information sharing with distributors.
	ColISUPIS	Information sharing with suppliers.
Business Intelligence (BI)	ColIDISIS	Information sharing with firms in the district.
	DBICUS	BI support for individual customers.
	DBISUP	BI support for individual suppliers.
	DBICAGG	Aggregate BI support for customers.
	DBISAGG	Aggregate BI support for suppliers.
	DBIOWN	BI support for own organization.
Integration Processes	Variable	Description
Data Integration	IDVERT	Vertical– with customers and suppliers.
	IDHOR	Horizontal– with other vendors.
	IDGOV	With Government and regulatory agencies.
Application Integration	IAVERT	Vertical– with customers and suppliers.
	IAHOR	Horizontal– with other vendors.
	IAGOV	With Government and regulatory agencies.

The results across the complete set of participating companies (24 companies) are presented in Exhibit 1. Key observations from these results are as follows:

- There is a significant variation in the levels of use of e-business mechanisms for various business processes, across the surveyed companies.
- The highest levels of support are in the areas of Search and Authentication within Trade Processes, and for Collaborative Information Sharing Internally, in the Decision Support category. In these areas, companies surveyed use on average at least 40% of the commonly available e-business mechanisms. It is interesting to note that the mean for product authentication is slightly above 30%. The lack of online product authentication may be acceptable for dealing with established customers who are already familiar with the company's products. However, this is an area that would require extra attention if the company seeks to use e-business to expand its markets and find new customers.
- The support for the other process categories and sub-categories was around 30% or lower on average, with integration being the least supported category. This suggests that most Flanders companies focus their e-business efforts on online selling, and therefore could potentially gain significantly in key business processes by exploring e-business opportunities in areas such as decision support and integration.
- Most companies are far more advanced in their use of e-business for customer-facing processes, rather than for supplier-facing processes. This is consistent with the above-stated view that e-business is primarily e-commerce (online selling).
- There is a wide range of e-business use across the participating companies. In a number of categories, such as Search, Authentication, Logistics and Business Intelligence, there are high levels of use (indicated by maximum normalized scores of at or near 1.0) by at least some Flanders companies (even though the companies achieving high levels in the different areas are not the same). Also, in some categories, there are clear outliers, as evidenced by the gap between the mean and max scores. Examples of this occur in almost all categories other than Search and Authentication. This suggests that while there are some companies in Flanders that are on the leading edge in these process categories, most Flanders companies are not using e-business for such processes. This also indicates that across the set of participating companies, there is a substantial wealth of expertise in e-business. Better knowledge sharing and collaboration mechanisms could therefore help the region become much more globally competitive.

7.1 Product versus Service Firms

The distribution of participating companies in terms of what they sell (product/service/both) is as shown below:



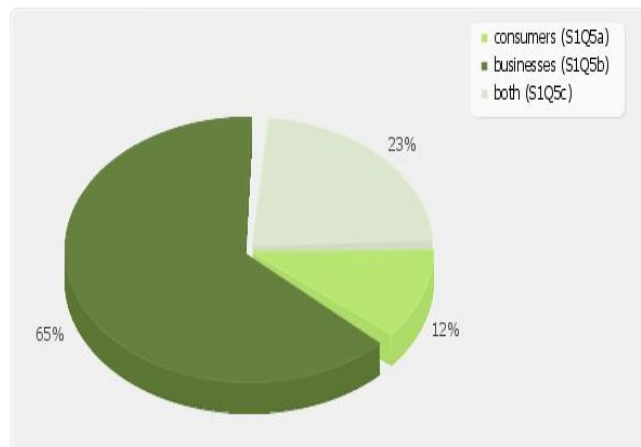
The mean scores for all the composite variables for all product and service companies respectively are shown in Exhibit 2. Key observations are as follows:

- Both types of companies provide highest levels of support for search (customer and product) and authentication (between firm and customers), and internal collaboration.
- Product companies provide higher levels of support for all the trade processes. The only categories where services firms do better are in business intelligence and data integration.
- Company size (see later) may be an important factor. Product companies are larger on average. It is interesting that smaller services companies can do more to leverage the power of e-business to level the playing field.

In summary, product companies could significantly broaden their use of e-business beyond online transactions. This can help them build stronger business networks and improve their back-end processes. On the other hand, services companies can do more to leverage e-business to enhance their customer-facing processes and transactions.

7.2 B2C versus B2B Firms

The distribution of companies by whom they sell to (consumers, businesses, both) is as shown below:



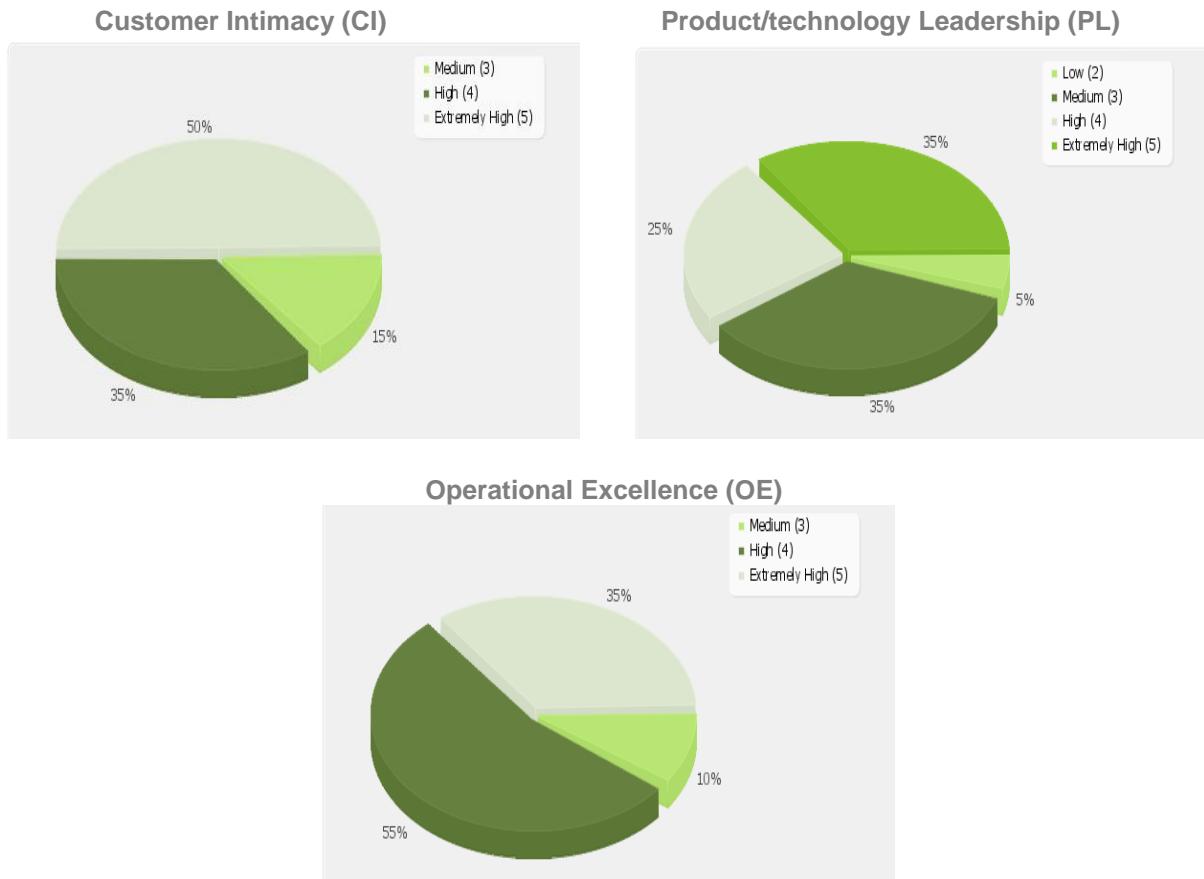
The mean scores for all the composite variables for all B2C and B2B companies respectively are shown in Exhibit 3. Key observations are as follows:

- Consumer firms provide higher levels of support for all customer-facing trade processes, but consistently lower levels of support for supplier-facing trade processes. This suggests that such companies could significantly improve the efficiency of their back-end operations and supply chains through e-business.
- In non-trade process categories, the two types of companies are surprisingly similar in their use of e-business, for decision support and integration. The only notable difference is in the area of application integration, where consumer firms have slightly higher levels of support. More generally, the mean levels of support for decision support and integration processes is very low, generally below 20%.

This suggests that e-business in consumer firms may be driven largely by marketing concerns. Such companies could benefit from broadening the management of e-business initiatives across the organization.

7.3 Competitive Strategy

The distribution of companies in the survey set in terms of the significance of the three key strategic priorities is as follows:



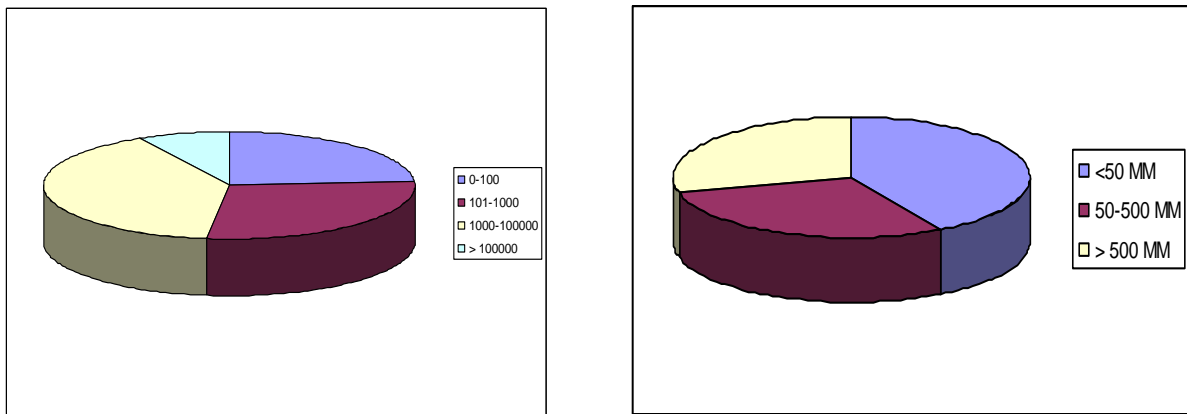
The mean scores for all the composite variables for all companies based on their key strategic priorities are shown in Exhibit 4. Key observations are as follows:

- Product leadership (PL) – focused firms seem to dominate firms that focus on customer intimacy (CI), for most of the trade processes. This may be due to the perceptions by CI-focused firms that the Web is too impersonal, and insufficiently rich to effectively support customer-facing interactions. For example, they may believe that they need to be more dynamic and flexible in their customer interactions, and that e-business solutions may take too much time and are not flexible or adaptable enough. Such firms could benefit by exploring the ability of e-business to enhance customer interactions and relationships by exploiting the greater information richness and customization/personalization potential of the e-business approach.
- PL-focused firms provide relatively high levels of support for search and authentication. In the latter category, they do consistently more across all sub-categories of authentication – customer, supplier, organization, and product.
- CI-focused firms are doing surprisingly little in exploiting e-collaboration with their customers. In general, PL-focused firms are doing more in the area of e-collaboration. At the same time, all three types of firms provide relatively low levels of support for e-collaboration across organization boundaries. Increasing these levels could be particularly significant for firms focusing on CI or operational excellence (OE).

- For OE-focused firms, while they do well on a relative basis in supplier interactions and in processes such as payment and logistics, their use of e-business is still quite low. Such companies could substantially improve their processes, both internal and intra-organizational, through e-business mechanisms.

7.4 Company Size

The distributions of companies in the study set in terms of their size as measured by the number of employees and annual revenues (in euro) respectively are as follows:

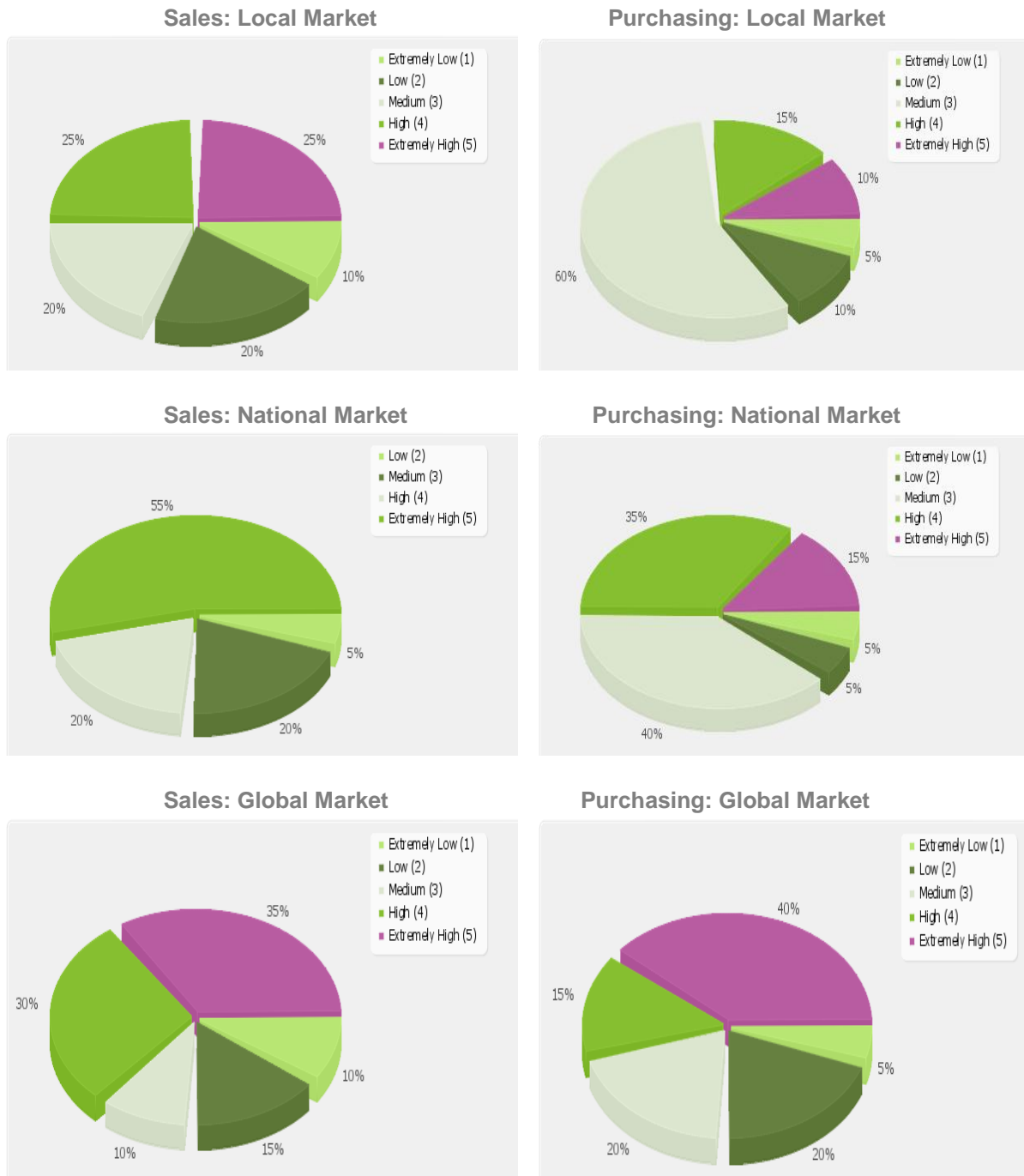


The mean scores for all the composite variables for all companies based on their size as measured by annual revenues are shown in Exhibit 5. Key observations are as follows:

- Large companies uniformly dominate support for all trade processes. This may have to do with their IT resources. On the other hand, smaller firms are not leveraging e-business for their trade processes beyond customer search. It is not surprising that small firms try to build awareness through their Web sites. However, it is clear that they can and should do more, across all the trade processes, particularly given the cost effectiveness of the e-business approach.
- The one area where medium-size firms do more is in the area of authenticating the firm to customers. This makes sense, since large firms may assume higher brand and identity awareness, and therefore not invest as much in this area. On the other hand, smaller firms may cater to a more local market, where they have higher awareness. For such firms, enhancing their e-business support may take on higher significance for expanding their markets, rather than serving existing customers.
- In the area of integration, again large companies dominate. What is surprising, is the very low level of support for medium-size firms. One explanation may be that large firms have more extensive Enterprise Resource Planning (ERP) and integrated software resources that facilitate integration, and small companies are more motivated to integrate their systems with their partners to gain business. Medium-size firms are therefore caught in the middle. Such firms should consider the use of cost-effective middleware and creative e-business solutions (such as Application Service Provider (ASP) - mode applications) to improve their effectiveness in their business networks.
- Small firms are most creative in using Web-based BI mechanisms with customers and suppliers, while medium-size firms are doing the least. This may be because small firms recognize the value of such mechanisms to build stronger relationships, but it may also be due to larger firms using more traditional channels for such interactions. Medium and large firms can thus benefit significantly by expanding their BI capabilities and locking in customers and partners with such services.

7.5 Local/National versus Global Firms

The distributions of companies in the survey set in terms of the local, national and global markets in their sales focus and their purchasing focus respectively are as follows:



The mean scores for all the composite variables for all companies based on their market scope for sales are shown in Exhibit 6, and for all companies based on their purchasing scope are shown in Exhibit 7. Key observations are as follows:

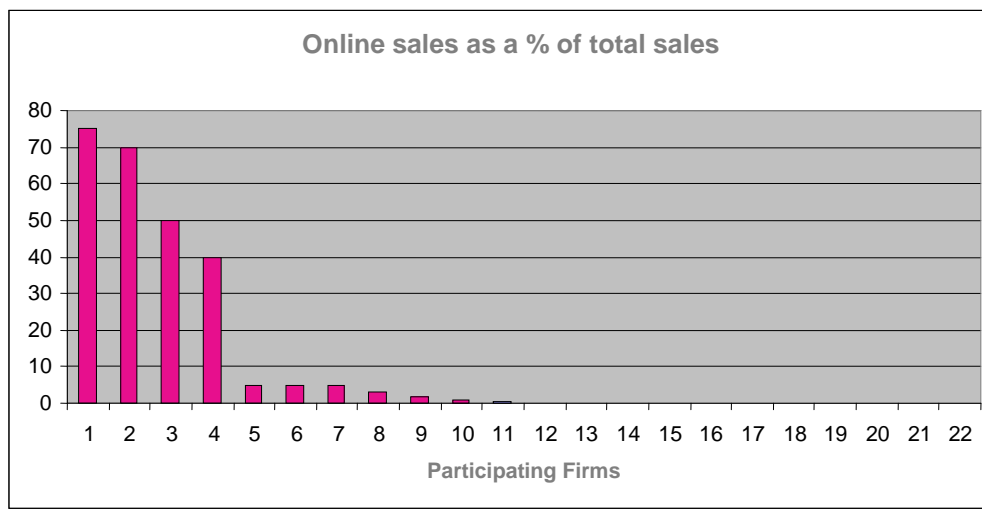
- In comparing firms SELLING locally versus globally, the patterns of e-business support are relatively similar across trade processes other than logistics. In the areas of logistics and integration, local/national firms use the Web much more extensively than global firms. This is not

surprising, since local/national firms are more familiar with their customers and suppliers, and therefore may perceive less risk in using online processes. On the other hand, firms selling globally can potentially compete better in the local/national markets by providing higher levels of support for logistics.

- In comparing firms BUYING locally/nationally versus globally, it is notable that local/national firms use e-business more extensively across all processes than firms buying globally. Again, the explanation may be the same. This has two implications. First, global sourcing firms can improve the effectiveness and efficiency of their supply chains by using more e-business. Second, companies that are currently buying locally/nationally, and using e-business mechanisms in these markets, could potentially leverage their e-business investments and processes to compete more effectively against larger global competitors who have been slower in adopting e-business.

8 Conclusion

The companies that participated in the study span a broad range of industries, size, type, and geographical scope. They also demonstrated a broad range of e-business use and capabilities. For instance, as shown in the graph below, the companies ranged in their use of online sales from zero to 75%, with about half of the companies selling online. Likewise, for online purchasing, again about half of the companies purchase online. However, none of the companies did more than 30% of their purchasing online.



Furthermore, as shown below, about 30% of the participating companies expect their online sales to grow significantly, and a similar number of companies expect to increase their online sales slightly over the next year. In other words, the majority of the companies expect to increase their online sales even in the short term.



The analysis in this study indicates that Flanders' companies can benefit significantly by expanding their use of e-business across a broad range of business processes. This will help them to build better relationships with customers, suppliers, and other business partners, as well as to lower costs and improve profitability.

At the same time, Flanders companies can also use e-business to significantly enhance their ability to tap into new markets, both locally and globally. Particularly in the latter context, the e-business approach would be essential.

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Exhibit 1 Aggregated Results across All Participants

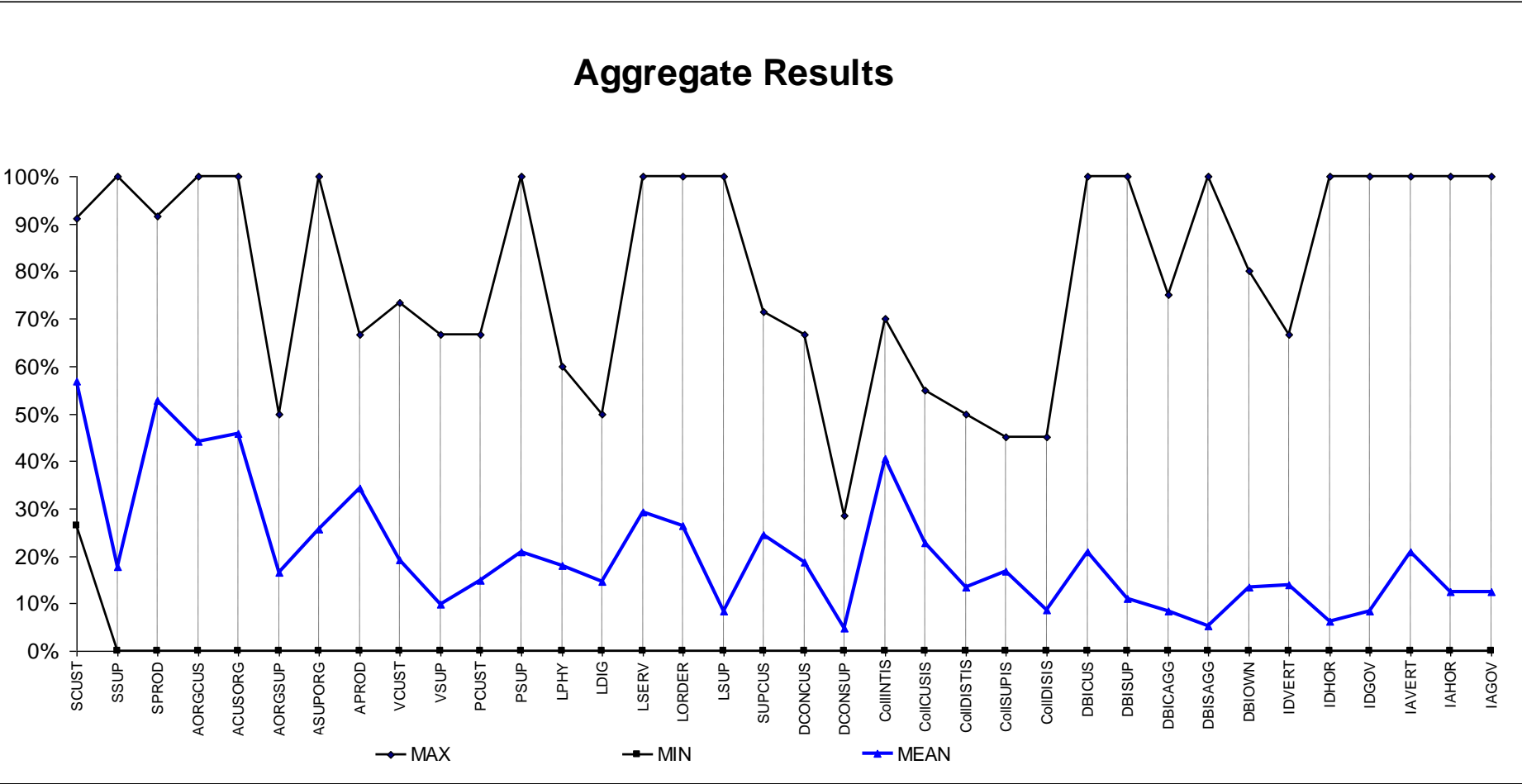


Exhibit 2 Comparison across Product versus Service Companies

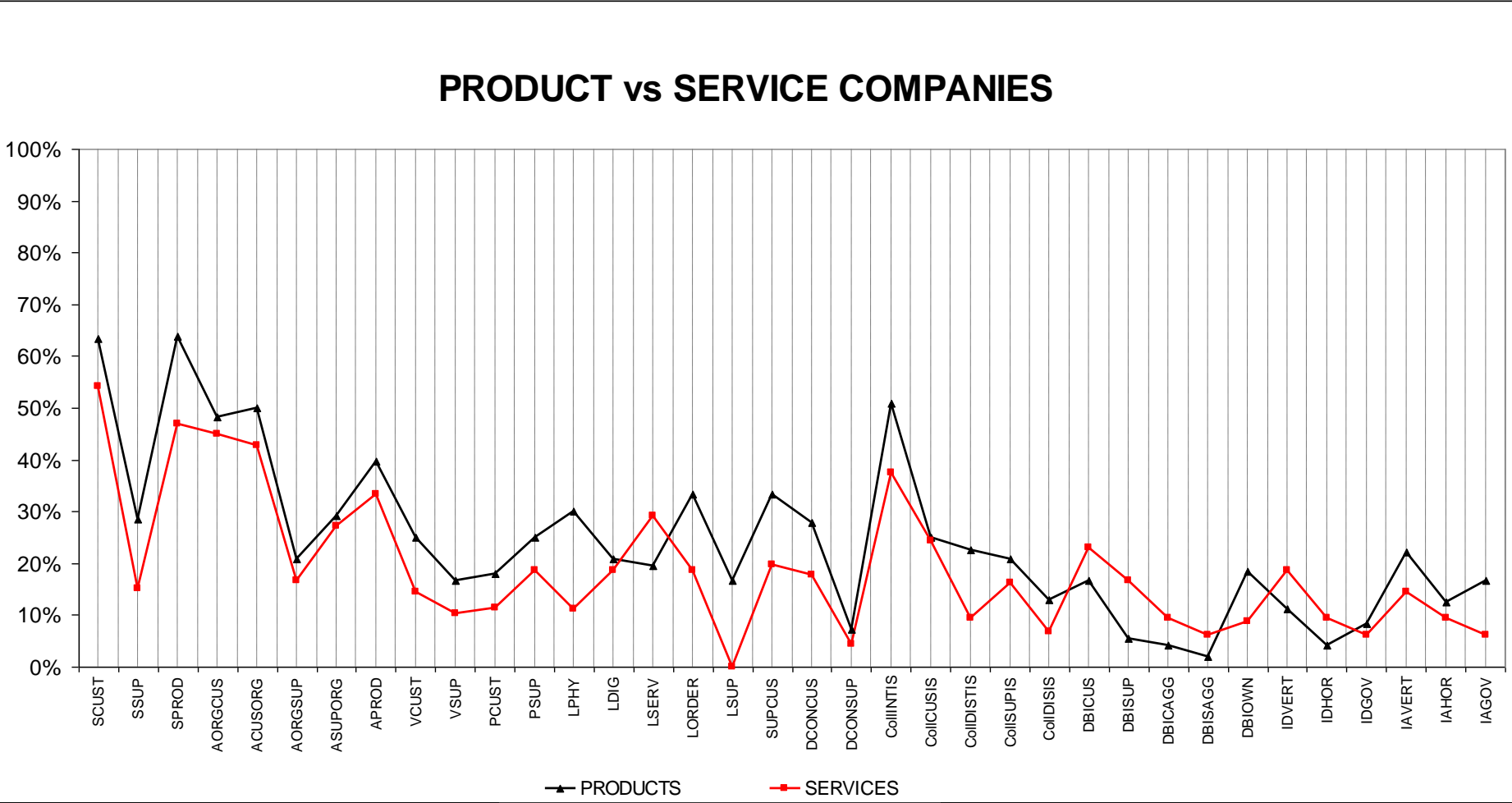


Exhibit 3 Comparison of B2C versus B2B Companies

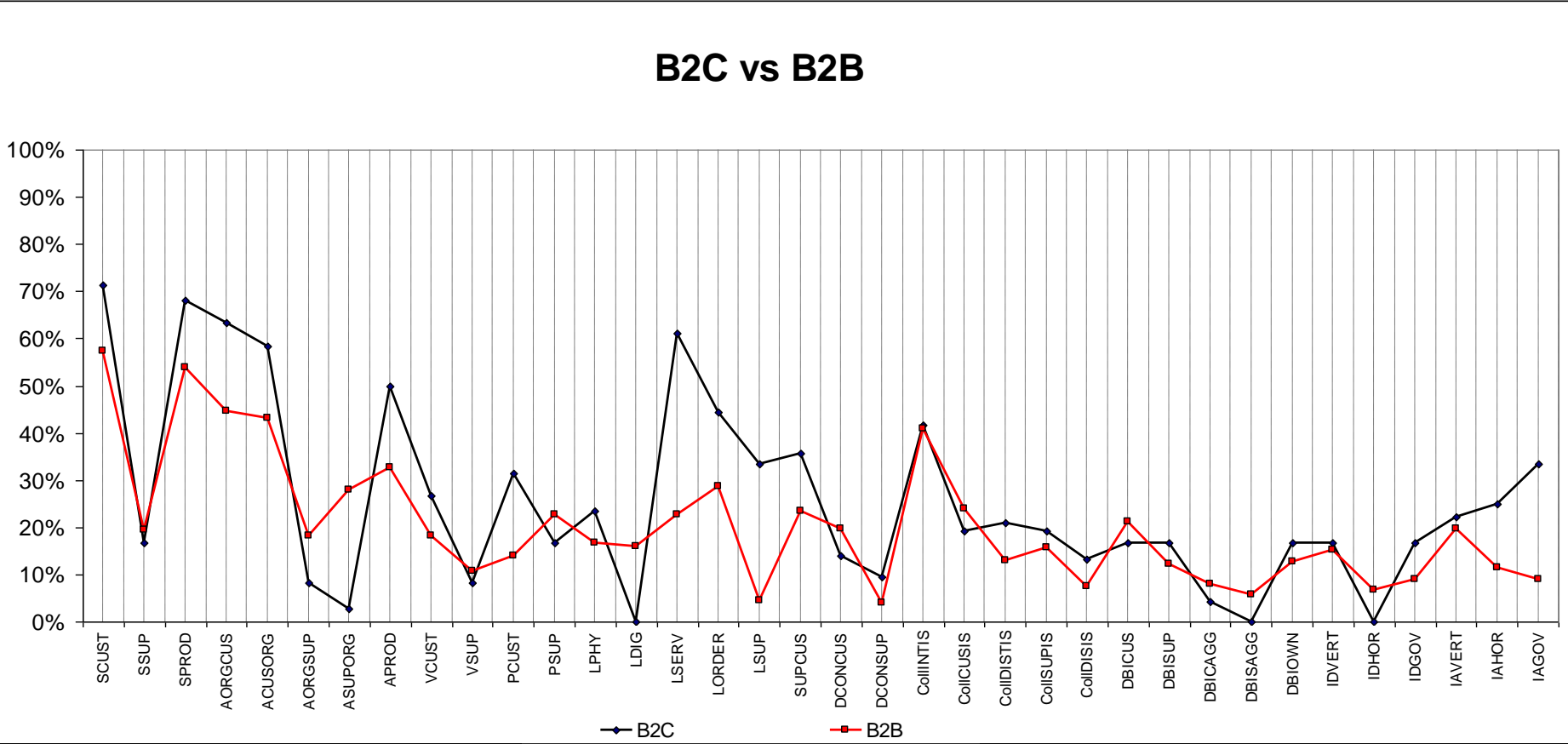


Exhibit 4 Comparison of Companies based on their Strategic Priorities

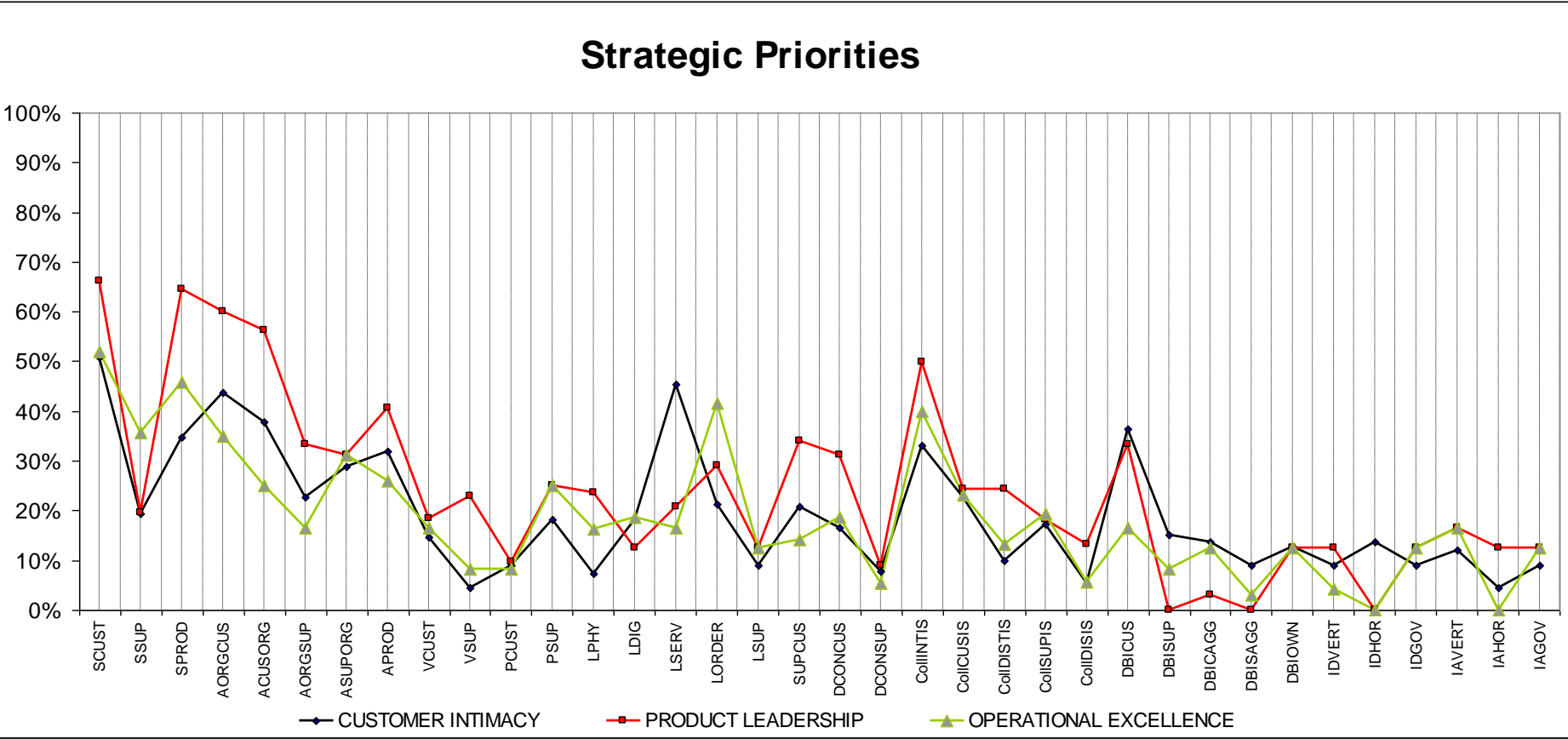


Exhibit 5 Comparison of Companies based on their Size (by Revenues)

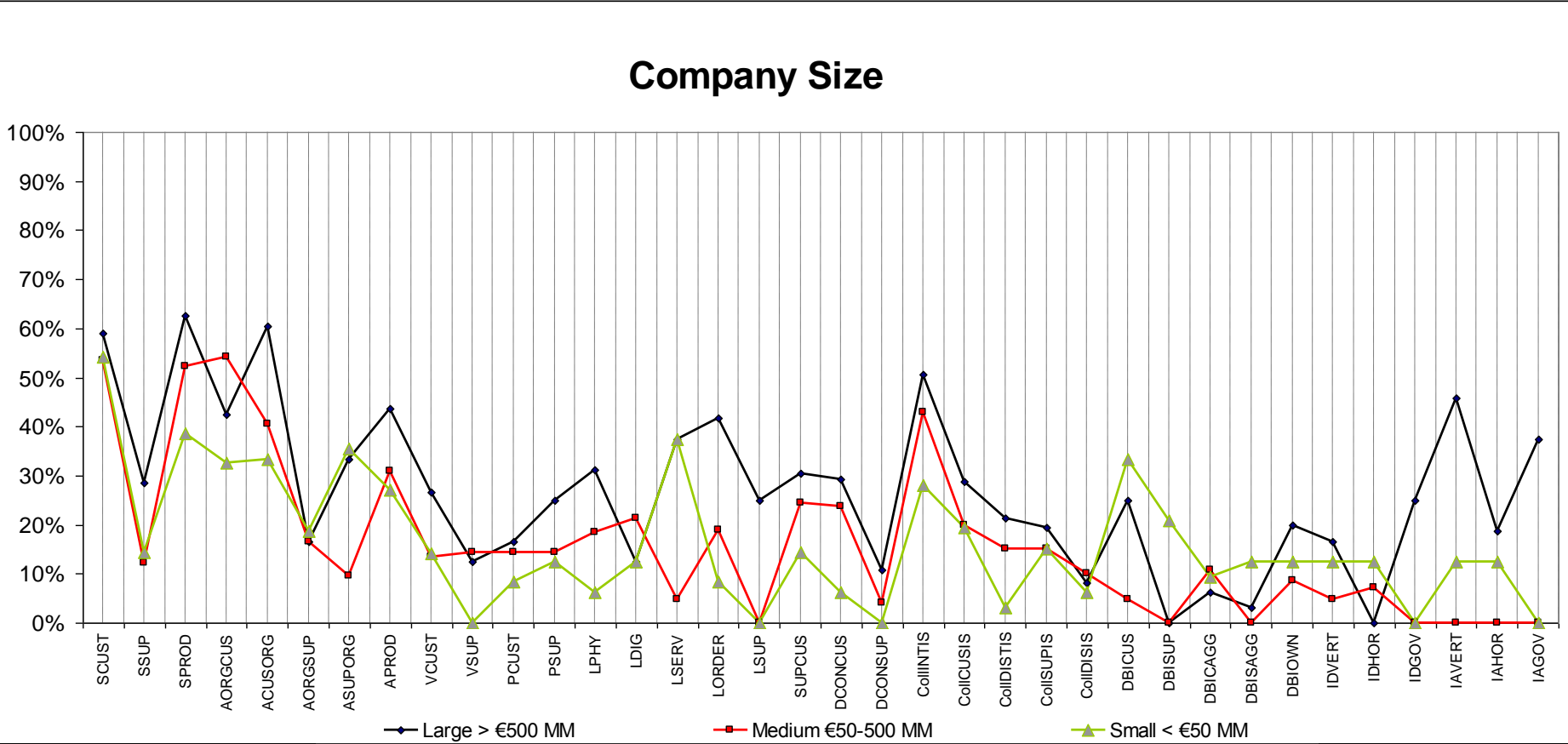


Exhibit 6 Comparison of Companies based on their Market Scope (for sales)

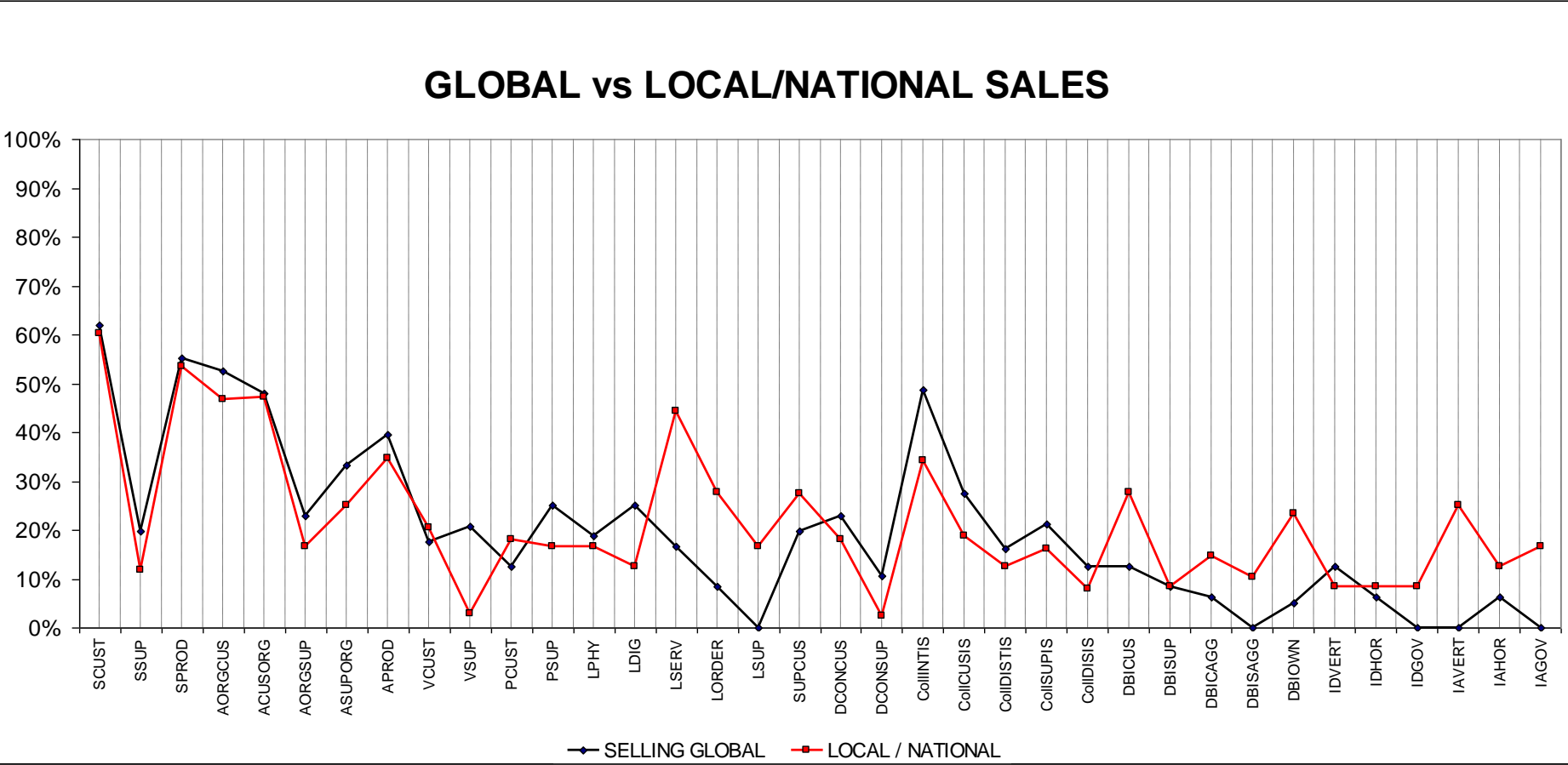
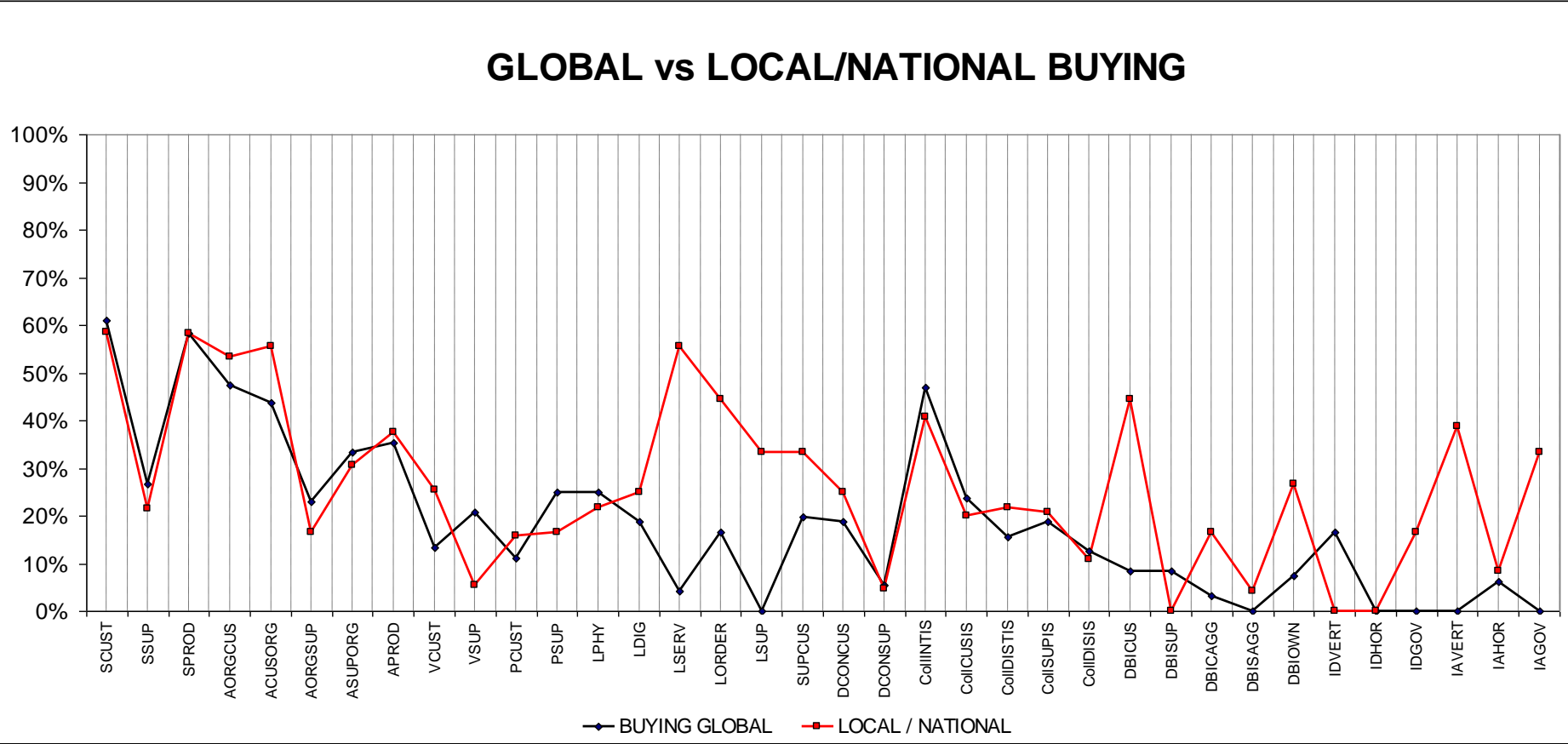


Exhibit 7 Comparison of Companies based on their Purchasing Scope



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