

Fuel business transformation with electronic invoicing

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ABSTRACT

This case study helps students understand the importance of IT technologies and applications in the effective management of a company. This study illustrates the administrative challenges that BSH company faces to reduce operational costs and improve customers' relationships. Today, information systems and online digital services can act as catalysts for fundamental changes in the structure, processes and management of organizations due to their increased potential.

BSH, operating in an international and volatile ecosystem with many suppliers and customers, is constantly seeking solutions to automate its operations, which in the short run will lead to reduced operating costs. In the light of this opportunity, it managed to develop a customized e-invoicing software in cooperation with Retail@Link, an independent applications service provider. The final e-invoicing service, despite the initial barriers to design and implement such a complex system, has advanced BSH's internal operations and has helped to reduce costs by making better use of all available resources. The payback period of the investment was less than two months and up to now the company collaborates via electronic invoicing with more than three hundred business customers.

Keywords: e-invoice, business transformation, case study, digitization, IT system

1. ABOUT BSH

BSH Hausgeräte GmbH is one of the world's leading companies in the sector and the largest home appliance manufacturer in Europe. Founded in 1967 as a joint venture of Robert Bosch GmbH (Stuttgart) and Siemens AG (Munich), BSH has belonged exclusively to the Bosch Group since January 2015. Over its almost 50-year history, the company has grown from a German exporter into the world's second-largest home appliance manufacturer. With more than 58,000 employees, BSH increased its revenue in 2016 to around 13.1 billion Euros. BSH has some 40 factories worldwide and produces the entire range of modern home appliances. This ranges from cookers, ovens and extractor hoods, dishwashers, washing machines, dryers, fridges and freezers to small appliances (Consumer Products) such as vacuum cleaners, coffee machines, kettles, irons and hairdryers.

BSH in Greece is a leader in the production and trade of large household appliances, consumer products and household technology. The Greek branch produces refrigerators and kitchens in Greece and at the same time trades ready-made and imported household appliances (refrigerators, kitchens, washing machines and dishes as well as small appliances). The Bosch and Siemens brands have a key role to play in the company's success. With the three specialized brands (Gaggenau, Neff, Constructa), BSH ensures that each customer's specific requirements are met. At the same time, the very strong traditional Greek brand PITSOS completes the product portfolio by taking the first place in the Greek market. BSH being one of the leading companies in the field of home appliance production has succeeded in linking its name to innovation, quality and reliability. It holds a leading position in the Greek market with approximately a 40% market share in household appliances, while its export activity is constantly increasing in European countries. Its turnover amounts to € 266 million, of which € 53 million corresponds to exports. The company employs more than 769 people who are continually trained (37% of the company's employees participated in at least one training activity). The strategic objectives of BSH for the upcoming three years are:

- Maintaining market leadership in the field of large home appliances (at least 40%)
- Further penetrate and improve the market share of small appliances
- Remain profitable
- Increase exports
- Minimizing business and financial risks
- Establish effective communications with stakeholders to enhance corporate transparency on Corporate Social Responsibility (CSR) issues
- Product innovation through the development of eco-friendly products

2. THE PROBLEM

2.1 Dealing with Many Corporate Clients

BSH Greece, as shown in Figure 1 (Appendix), operates in a very wide and volatile ecosystem with a multitude of customers and suppliers and always under the umbrella of the parent company from which it acquires know-how, technology and up-to-date production and management methods. Protecting the environment and the climate has been an integral part of the Group's corporate strategy for decades.

As far as its customer base is concerned, the company sells its products to end consumers exclusively through its commercial partners (see Table 1 in Appendix).

On a daily basis, interacting with commercial partners means hundreds of transactions and a lot of complexity. For example, partners can order BSH products via a) a corporate web business-to-business portal, a web site in which the partner can see real-time pricelists, offers and new products, (b) personal wholesaling where a BSH agent visits commercial partners and on the spot, using a laptop, transfers the order to the BSH headquarters, (c) e-mail and attached order forms, or even d) fax, because not all customers have online access. All orders are compiled into the ERP business software, which manages the company's financial and production operations centrally.

When a commercial transaction (sale of goods or provision of services) is carried out, the main document required to be issued, for this transaction to be legal, is the invoice. The company publishes a high number of invoices; around 140,000 documents are printed and traded annually. This process is associated with considerable costs, such as costs for printing and filing invoices, postage charges or even, in a wider context, with a number of environmental impacts. In general, the printed version of the invoice raises serious supply chain problems (mistakes in transactions, delays, etc.) and it is estimated that each invoice costs about €5-7.

Given the high cost per document and the large total volume of documents, the main goal of BSH was to reduce the cost of invoicing and archiving. The initial cost (before applying the e-invoice service) was estimated to exceed €1,164,000 per year. Additionally, the company's main goals were the shift of control to the local management, acceleration of control procedures, enhanced search and retrieval processes for historical records, as well as the reduction of consultation time to serve invoicing issues with commercial partners. To sum up, the main issues required to be solved by the application of the e-invoicing and electronic archiving solutions were the following:

- Reduce document management costs throughout the invoicing process, from handling, registering to archiving documents (storage-paper-time)
- Automation of the processes for archiving and internal controls, leading to reduction of administrative time in the accounting department
- Automatic indexing of all vouchers supporting the automated electronic searching and retrieval of e-archived invoices
- Central management, safeguarding of the process' accuracy and compliance with the national regulatory framework
- Quick roll-out to many recipients with many invoices per month
- Shorten the payment cycle and improve the cash flow
- Foster continuous improvement of corporate sustainability (less paper and CO₂ emissions)

To better understand the problems caused by paper invoicing, it is essential to examine more closely at what paper invoicing means, which entities are involved and what is the process.

2.2 Paper Invoicing – the Traditional Way of Doing Business

Today the invoice is the main document required to be issued when a legitimate commercial transaction (sale of goods or provision of services) occurs. An invoice is not the same as a receipt, which is an acknowledgement of payment. The invoice is a non-negotiable commercial instrument issued by a seller to a buyer. It identifies both the trading parties and lists

the items sold, shows the date of shipment, prices, place of delivery and payment terms. It ensures the legitimacy and validity of the transaction, while also being the primary element for tax and audit procedures. It is therefore linked to specific legal requirements relating to its content, form, duration of storage, etc.

Generally, the process involves the following entities and their respective roles:

- Issuer of the invoice. An entity that is liable to create an invoice and is claiming payment for goods or services rendered to the customer.
- Receiver of the invoice. The party receiving the invoice, usually the buyer.
- Other entities may be involved in completing the process, such as:
 - Government or private auditors. These entities mainly examine records of private businesses performing activities subject to government regulations or taxation.
 - Accounting firms that specialize in audit, tax, and advisory services.
 - Banks / credit institutions through which manage and report invoices' payments.

Figure 2 (Appendix) depicts a simple manual invoicing process between two companies. The number of steps involved will vary depending on the size and the complexity of the billing operations. In this scenario, the key costs and bottlenecks for the trading parties are depicted in Table 2 and 3 (Appendix):

The dependence on manual and paper-based invoicing can be one of the greatest challenges for accounts payable (AP) and accounts receivable (AR) departments, being expensive, labor-intensive and prone to error. In a networked economy, where many of the business processes are being automated, inefficient financial flows can lead to a serious competitive disadvantage.

3. THE OPPORTUNITY OF E-INVOICING

According to Directive 2001/115/EC of the European Union, e-invoicing is defined as the sending of invoices by electronic means and includes the transmission, storage and digital processing. The e-invoicing process needs to employ fully structured data, which are capable of being processed automatically by senders, receivers and other involved parties (Veselá and Radiměšský, 2014). Suppliers and buyers exchange digital and tax-compliant invoices as the valid original invoices. They can exchange them directly or via independent service providers even in a fully integrated and interoperable way. Therefore, the distinctive promise of the e-invoice is not only the apparent savings in printing and postage costs but also its potential for full process automation and integration from order to payment between trading parties (European Commission, 2010).

In this era of e-business, it plays a critical role in maintaining business information throughout the supply chain (Chang et al., 2013). E-invoicing represents the link between the logistics and financial cycles and could be the keystone capable of raising business processes to higher levels of efficiency and competitiveness through a reduction in costs and an overall improvement in the effectiveness and quality of those processes (Passi, 2015). Salmony and Harald (2010) summarize the benefits of electronic invoicing systems for small, medium and large enterprises to the following: improved enterprises competitiveness; increased productivity and customer satisfaction; cost savings due to the reduction of manual work and transportation costs of physical documents; accelerated payments, improved cash flows; reduced credit losses; and increased interoperability for payment transactions among trading partners' information

systems. Overall, electronic invoicing enables better monitoring and ensures the efficiency of the supply chain.

According to a study from the Federal Reserve Bank of Minneapolis (2016) twenty-five percent of Business-to-Business (B2B) invoicing is handled electronically in United States. U.S. policy lags behind the European Union (EU); EU has so many members, languages, and includes various currencies and therefore there is a much stronger need to have a standard format and transparent regulatory systems for e-invoicing transactions. So far, government mandates are the main enablers for high level adoption in most of the countries; these mandates request e-invoicing use either for tax compliance purposes or to improve the efficiency of B2G transactions.

Based on the resolution (POL 1049/21-3-2006), e-invoicing was enacted in Greece in 2006. According to estimates, in Greece, more than 200 million invoices are exchanged annually. The volume of e-invoices is constantly increasing and now exceeds 12 million invoices per year. To date, some 25,000 businesses have leveraged the possibilities of e-invoicing. Businesses using electronic invoices belong mainly to the retail market, which is characterized by a large volume of transactions and invoices. The retail market is estimated at about eleven billion euros and already around 70-80% of the market is using electronic document exchange and e-invoice services. Local studies mention that the total cost of manual and paper-based invoicing for Greek businesses is estimated at 3 to 4€ per invoice, and in some cases and business sectors, it goes up to 5 to 7€ per invoice. Even if the average cost is much lower than in other countries, where other reports mention that the average cost per invoice can go up to even 60€ (Graham, 2015), the amount that can be saved for Greek businesses, from the adoption of e-invoicing, is estimated to reach €2.5 billion per year, without taking into account the significant public administration savings, purely based on the automation of invoicing and removing the unnecessary handling of paper e.g. between different government bodies or departments or through postal services.

On the supply side, the e-invoicing is largely fragmented with many service providers market and business models. At a European level, more than four hundred e-invoicing service providers are active and more than ten operate in Greece, offering a wide variety of e-invoicing business models. Different models appear due to on-premise or hosted solutions, the level of integration to ERP systems, and of course as a result of different country regulations. The basic e-invoicing models are (Fernandes and Longbottom, 2011):

- Buyer direct: the buyer accepts paper and electronic invoices from suppliers, but takes responsibility for converting paper to electronic format.
- Supplier direct: the supplier is responsible for creating a digital invoice directly from its Accounts Receivable (AR) system or via a web based form, eliminating the buyer's need for manual data entry.
- Consolidator: invoices, regardless of data standards, are interchanged via a third party such as an application service provider (ASP). Usually purchase orders originate in the supplier's ERP and sent through the ASP's Network. Examples of such ASPs are Ariba and Basware. ASPs also provide supplementary value-added services such as archiving, invoice tracking, cloud-based e-invoicing, payment scheduling, configurable workflows for its users and other rules-based automation services.
- Total invoice management as a managed service: A managed service provider (MSP) takes full control of the invoice process, from the manual capture of paper invoices, and the handling of diverse of invoice formats (e.g. XML, CSV, and EDI) to the submission

of the invoices in the buyer's pre-defined format. Software is developed and operated by the MSP and its revenues are transaction-based.

As already mentioned, so far, e-invoicing is partially adopted all over the world and has not completely replaced the manual process, albeit its direct financial gains. In the process of introducing and adopting e-invoicing, managers encounter various challenges and barriers, such as: complexity of implementing the e-invoicing solution, reluctance to adopt these solutions from the commercial partners, instability of the tax laws and e-invoices formats or even security concerns of e-invoicing systems (Spoz, 2014). Moreover, while paper invoicing seems inefficient and costly, it works, hence leading to the phenomenon of organizational inertia. Routines and established patterns of thinking and activities can lead to organizational inertia, producing resistance to change (Katsuhiko and Hitt, 2016). Organizational inertia is defined as an overarching concept that encompasses personal commitments, financial investments and institutional mechanisms supporting the current way of doing things (Huff, Huff, & Thomas, 1992). Especially larger organizations lack motivation to seek information about the benefits of e-invoicing and the case for change (Federal Reserve Bank of Minneapolis, 2016).

Top executives seem to figure prominently in an organization's propensity for either inertia or change (Hambrick, Geletkanycz, and Fredrickson, 1993). The Chief Executive Officer (CEO) of BSH, has been open-minded about change, active supporter of e-invoicing and with a clear view of the initiative's strategic value. There is extensive empirical support for the role of managerial influence in the successful implementation of information systems (IS) innovations. CEO and top management support have been found to be positively correlated with successful IS implementation (Yetton, Sharma, and Southon, 1999). When a new IS project has the support and approval of the top management, it is more likely that it will be successful and end users will finally accept this innovation. Top management support also ensures adequate staffing capacity and financing. Now, the CEO must decide on how to proceed, what technology to use, whether to build this information system (IS) in-house or outsource it to an agency and which e-invoicing business model to choose.

4. THE DIGITAL CHANGE

The first big challenge for BSH was the kind of technological solution to adopt. Four options were available: semi-automated process using PDF invoices, web portals (sender and receiver based), end-to-end automated e-invoicing process, and, finally, fully integrated order-to-payment cycle (Ciciriello and Hayworth, 2009).

The management team considering these four types of electronic invoicing, decided to go for the third alternative and the end-to-end automated e-invoicing process, with the possibility of extending it later, so that both ordering and payment by customers can be executed digitally ("fully integrated order-to-payment cycle"). The next step was to implement the e-invoicing process and therefore the company should decide whether to develop a proprietary software and exchange documents directly with its partners or outsource the development and maintenance.

In the first case, i.e. the direct end-to-end solution, the parties involved (BSH and its commercial partners) send and receive e-invoices through a specific network infrastructure without the infrastructure and support of an ASP. The exchange is based on the transmission of the e-invoice via a Value-Added Network (VAN) or the Web. The process is executed through software, which is installed on the issuer and / or the recipient of the e-invoice and usually

supports the issuance (e.g. filling data in structured forms), sending the invoice, but mainly converting the invoices' format between the issuer and the recipient.

BSH decided to reject this option for a number of reasons: (a) the regulatory framework for e-invoicing is relatively recent and therefore quite often changing, with consequent implications for any proprietary software implementation, (b) in the long run e-invoicing cannot become a source of competitive advantage for businesses, and management science research suggests that companies should focus on what they can do best (Levina and Ross, 2003), (c) proprietary e-invoicing software is inappropriate in the case of a large number of trading partners that use different invoice formats and ERP systems and (d) the German parent company's invoicing system was also different. This way, the decision was to outsource the IS to an independent ASP.

BSH, after a two-month research period, collected and assessed various offers from corresponding ASPs and eventually chose to cooperate with Retail@Link (<http://www.retail-link.gr>), one of the leading providers in the sector of e-invoicing. Retail@Link was established in July 2003 to provide value added services in the areas of electronic data interchange (EDI), e-invoicing and e-archiving and supply chain optimization. With the use of advanced IT technologies and new innovative cooperative models, Retail@Link acts as an independent application service provider, providing each customer with customized services that are compatible with its organizational framework and business philosophy. The company has significant experience in the retail industry and is dynamically expanding into new markets.

The development of e-invoicing in BSH premises started on February 10, 2012. It took about two months for Retail@Link to meet the requirements of BSH without, in the meantime, causing data corruption and data loss. To prepare a plug' n' play solution, BSH and Retail@Link needed to form appropriate working groups that would work together harmoniously and effectively. BSH set up a task force to develop and monitor the whole project (see Figure 3 in Appendix). This high-performing team orchestrate all technical and business aspects of the project, including IT architecture, functionality trade-offs, quality assurance, migration and rollout plan.

The technology platform which was developed and adapted to the BSH's business logic was the R@L e-invoicing Paperless & BizDoc Enterprise Edition[®]. The main features of this platform were:

- Electronic distribution and management of invoice documents, which eliminates the need for paper-documents.
- Electronic transmission via a secure Internet connection (Data@Link)
- Local electronic archiving for all accounts payables and receivables and secure storing in the company's servers
- Fast and efficient indexing for e-archived invoices supporting quick and easy retrieval and resending
- Notifications concerning the successful receipt of invoices
- Regular checking, for the safe invoice delivery
- Connectivity with any other ASP model and ERP system.
- Possibility to extend the solution to structured data transmission (or EDI).

5. PILOT TESTING AND PRE-LAUNCH

The development of this customized software was not without problems and challenges. During the pilot phase, which lasted two months and involved document exchange with BSH's main client, Retail@Link had to cope with several technical and managerial problems. These difficulties were mainly associated with the need to adapt BizDoc to BSH's existing business processes. For example, the company's international policy, stemming from its parent German company, prohibited remote access for the software implementation. This limitation caused time delays, since fast interventions to resolve small technical issues and make micro-adjustments was not possible. However, this policy had a positive side-effect; on-site implementation allowed BSH's IT staff to better understand the system's features and the related use-cases.

Upon completion of the pilot testing, on-site training was provided to seventeen BSH's employees in customer support, logistics, accounting, and IT-support departments for the right use and support of the application. The system was very easy to use and thus training lasted only four hours for the end-users. At the same time, another four hours of special training was conducted exclusively for the IT & Technology department for the effective use and maintenance of the system.

Finally, in June and after just four months, e-invoicing was ready to launch for all commercial partners. Before launching the application, BSH had already sent an email to all its clients to inform them about the opportunity of e-invoicing and specific details on how to become members of this initiative. It is crucial to note here that potential benefits that can be achieved from such inter-organizational accounting systems implementations are tightly connected to the achievement of a critical number of adopters among business partners and therefore willingness of trading partners to establish inter-organizational systems is of great importance for the system's success (Kreuzer, 2017). BSH received more than three-hundred letters of interest by June 5, so even from the very first day of the e-invoicing project, BSH started realizing the business value of this innovative information technology.

6. RESULTS

The IT Manager of BSH Domestic Appliances SA mentions: "The e-invoicing system has optimized our company's internal processes and helped us reduce costs through better utilization of all tangible and intangible resources. At the same time, we have ensured the reliability and transparency of the information we exchange with our partners".

The investment payback period was less than two months. That was a result of the fast implementation and rapid diffusion to a large number of invoice recipients. To date, the company exchanges e-invoices with more than three-hundred customers, accounting for forty-four percent of all its customers. With this adoption rate and for the first year of the e-invoicing system use, the company achieved a seventy percent digitization of its invoices and realized a reduction of invoice administration and transmission costs by almost thirty-nine percent. Retail@Link's solution is fully compatible with the ERP system the group uses. It was implemented in a very short time and at low cost. In addition, although their customers were quite reluctant towards e-invoices at the beginning, those who receive and archive their invoices electronically now, are absolutely pleased. According to moderate estimations, full use of the service with all the company's commercial partners is estimated to reach a fifty-five percent cost reduction.

Additionally, secure archiving is accomplished, as electronic files are not subject to normal wear and tear conditions (humidity, "fading", lost documents etc.) which may destroy the tax records. At the same time, employees' satisfaction increased significantly. Now, because of eliminating repetitive paperwork and automating processes, there are considerable time savings and the financial department personnel can focus more on credit control and cash collection tasks. The new system accelerated payment processes, leading to improved cash flows. It also simplified and harmonized the conditions laid down for invoicing with respect to fulfilling VAT reporting and audit needs.

In view of the growing depletion of vital resources and the rising burdens on the world's ecosystem, BSH constant seeks new solutions to minimize the ecological impact of its products and processes. E-invoicing, by e.g. reducing paper consumption and CO₂ emissions, has contributed to the company's sustainable development and is closely aligned with the its corporate social responsibility (CSR) agenda. Finally, some very interesting quantitative results of this project are highlighted in Table 4 (Appendix).

7. FUTURE TECHNOLOGICAL AND MANAGERIAL CHALLENGES

The introduction of e-invoices into a financial supply chain can be a key enabler to other projects, such as evaluated receipts settlement, supply chain finance and category spend management, each of which can have even greater impacts on a company's income statement or balance sheet (Keifer, 2011). At a later stage, the company wants to develop and operate a fully integrated order-to-payment system (online ordering, e-invoicing and online payment) to maximize the benefits of using IT in the invoicing process. This will enable BSH to realize the full value of digital data, as information will be easily discovered, managed, and governed, throughout the whole value chain and consequently will lead to better relationships with its customers, employees, partners, suppliers and governmental agencies.

Realizing the benefits of e-invoicing and wearing the hat of a customer, BSH is now considering the extension of the e-invoicing solution to its suppliers (more than 1,400 suppliers worldwide). BSH maintains regular contact with many different suppliers, ranging from local service providers to global producers of raw materials, technology and third-party logistics (3PL). The value of transacting with these suppliers is estimated at €1,000,000 per year and the use of e-invoicing will help both its suppliers and the company to realize more benefits.

8. DISCUSSION

1. What were the key factors driving electronic invoicing adoption?
2. What are the main e-invoicing models and their corresponding benefits for both suppliers and customers?
3. Can you name the most important administrative challenges that BSH faced when introducing e-invoicing?
4. Why BSH decided to outsource the project?
5. Why do you think that only a small portion of the company's business commercial partners initially accepted the invitation to participate in this new e-invoicing project?
6. What actions can BSH undertake to increase participation of its commercial partners in e-invoicing?
7. Please identify and analyze four concrete benefits from the adoption of e-invoicing.

8. How important is the CEO's role in making digital transformation a reality?

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APPENDIX

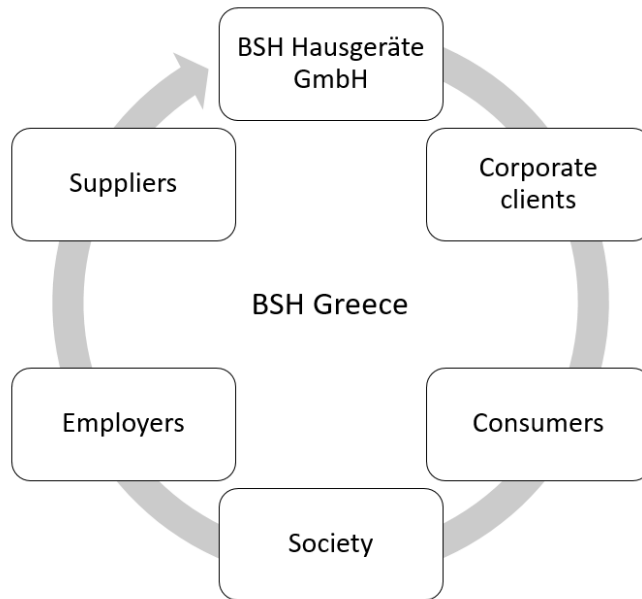
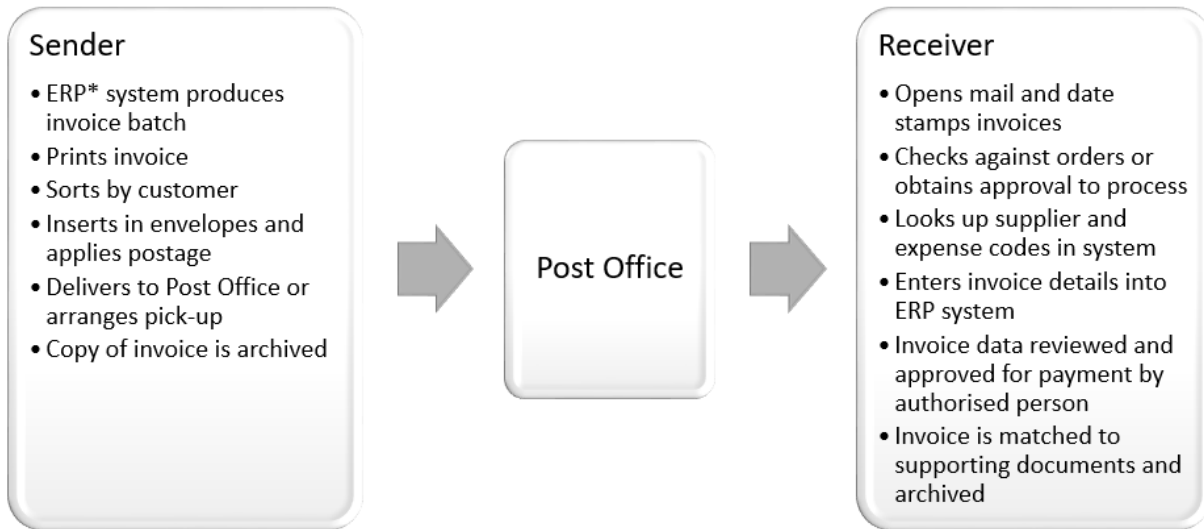


Figure 1 BSH's ecosystem



* Enterprise resource planning (ERP) is business process management software that allows an organization to use a system of integrated applications to manage the business and automate many back office functions related to technology, services and human resources. Source: <http://www.webopedia.com/TERM/E/ERP.html>

Figure 2 A simple manual invoicing process (adapted from Ciciriello and Hayworth, 2009)

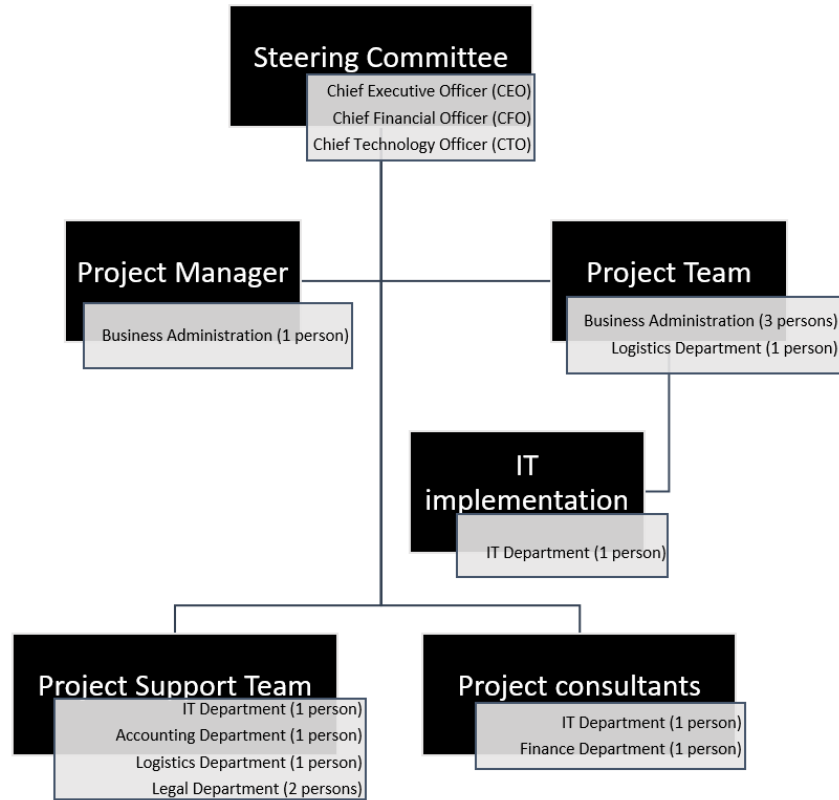


Figure 3 Project Team Chart

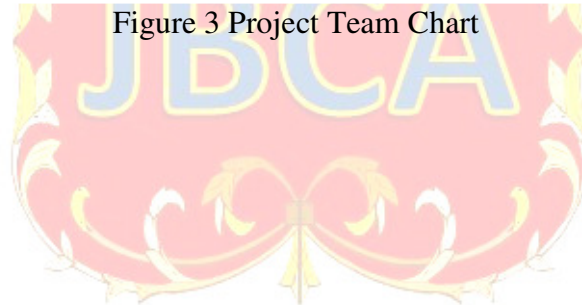


Table 1 Indicative commercial partners of BSH Greece

Commercial partners	
DSGi (Kotsovolos)	100 outlets
MSH (Media Markt)	10 outlets
Elektroniki Athinon	45 outlets
Sarafidis	6 outlets
Carrefour, Praktiker, Makro	60 outlets
Welcome Stores	26 outlets
Electronet	76 outlets
Best Electric	40 outlets
Ilmak-electro center	66 outlets
Kitchen furniture dealers	Non-available
Independent electrical appliances stores	Non-available

Table 2 Key costs/ bottlenecks of paper and manual invoicing for the supplier

For the sender	
Labor costs for managing invoice printing, sorting, filling the envelopes, posting, and archiving	Printing and postage cost
Follow-up costs for contacting customers due to lost or misplaced paper invoices	Environmental impact of paper invoicing
Pursuing delinquencies	Data errors
Impact on customer relationship management while resolving disputes with buyers	Costs for storing and archiving for tax audit purposes (filing cabinets, invoice copies etc.)
Dispute settlement costs	Skilled personnel spending time on manual processes instead of more strategic tasks
Recording receivables and reconciling customer accounts and bank statements	

Table 3 Key costs/ bottlenecks of paper and manual invoicing for the supplier for the buyer

For the receiver	
Data entry errors	Labor costs for sorting, registering and manual data entry of paper invoices
Costs for storing and archiving for tax audit purposes (filing cabinets, invoice copies etc.)	Costs for invoice capture, routing and approval processes
Dispute handling	Slower processing and payment cycles
Costs from duplicates and late payment fees	Impact on supplier relationship management while resolving disputes

Table 4 E-invoicing quantitative outcomes

Percentage of value related documents (e.g. commercial invoices)	31%
Percentage of escorting related documents (e.g. packing lists)	69%

Cost per document before e-invoicing	7,08€
Cost per document after e-invoicing (value related documents)	1,73€ (reduction of 76%)
Cost per document after e-invoicing	3,74€ (reduction of 47%)
Number of documents per year	140.000
Initial cost of invoicing (total)	987.000€
Digitization of value documents within the 1 st year of e-invoicing	70%
Final cost of invoicing after the e-invoicing solution (Full Roll Out)	442.530€
Savings for the first year of the e-invoicing implementation	39%
Savings from full implementation of the e-invoicing solution (Full Roll-Out)	55%
Total number of receivers of value and escorting documents	800
Total number of receivers of electronic invoices (1 st year of implementation)	343 (44%)

