ALBERO – Information System Design Project

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IS 330 – Information Systems

Information System Design Project

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**Company Information**

ALBERO is a start-up company specializing in the sale of original pieces of handcrafted furniture coming from such European countries as Spain, Italy, Russia, Finland, Denmark, the Netherlands, and others. It operates five stores, a warehouse, and a headquarters located in such cities as Prague, Brno, Bratislava, Košice, Žilina, and Trenčín. ALBERO has twenty-five internal employees altogether including a director, two regional managers, four stock-keepers, ten shop assistants, four drivers, one network administrators, one information technology specialists, and two logistics and finance employees. In addition to its highly qualified and trained internal personnel, ALBERO cooperates with several business entities to facilitate its marketing needs, recruit new well-educated and talented employees, and perform other tasks. ALBERO´s primary business goal is to become a leading importer of handcrafted furniture in the Slovak and Czech market by selling unique pieces of handcrafted furniture and providing a superior customer service at the same time.

**Systems Investigation Phase**

*Definition of the Company´s Problem or Opportunity*

As a recently established business entity, ALBERO is new to both the Slovak and Czech furniture markets which seem to be relatively saturated. The ALBERO´s decision to penetrate these two specific markets with various categories of furnishings unique in terms of a mix of used raw materials, a hand-made processing method, a country of origin, superior quality, a long lifespan, and other aspects, was based on the fact that the majority of its successful competitors such as ASKO Nábytok, IKEA, JYSK, or KIKA Nábytok tend to offer catalogued pieces of furniture which are produced on a mass scale and therefore they do no excel in any of the mentioned fields. However, having no permanent customer and supplier base, ALBERO faces an essential problem of establishing a communication and cooperation channel with these two as well as other groups of its stakeholders to come into their awareness and establish the long-term strategic relationships with them. Also, having no previous experiences in managing a spectrum of business activities which involve demanding data-processing tasks, ALBERO is in a critical need of acquiring a tool allowing it to enter, access, manipulate, share, and store data in a variety of forms such as financial analysis, business contracts, financial transactions, purchase orders, and others.

*Project Goal*

Being a recent entrant to the Slovak and Czech market of handcrafted furniture, ALBERO is in a need of designing, developing, and implementing a completely new information system that would support the entire chain of its internal and external business processes and operations. The primary objective of our company, which was approached by ALBERO about cooperation, is to determine the best possible information system solution, so that ALBERO can utilize data resources from a variety of sources, produce, process, disseminate, and share its information products with its employees, customers, suppliers and other stakeholders, and use a high-quality multifunctional communication media in a reliable, secure, and effective manner. Such an information system having this set of features would subsequently contribute to ALBERO´s effort to make communication with the existing and potential customers easier, support mutual collaboration between the company and its stakeholders, and provide an adequate tool for data processing and storing.

*Scope of the Project*

ALBERO is interested in acquiring an information system which would support the business operations and processes of the entire organization not only some of its units and would keep up with the latest trends in the field of information technology being available in the global marketplace. Therefore, the role of our team is to propose, purchase, and install a completely new information system which would help to coordinate all kind of business activities performed in the individual furniture stores, in the central storehouse, at the headquarters, and at the official website of ALBERO. Also, our company would ensure that the new information system of ALBERO meets the predetermined set of criteria related to the functionality, timelessness, competitiveness, and other aspects of individual pieces of hardware, software, and network resources that are new to the global information technology market.

*Cost/Benefit Analysis*

ALBERO can anticipate enjoying some tangible and intangible benefits and can expect to face some tangible and intangible costs.

Tangible benefits brought to ALBERO as a result of its new information system may include:

* the elimination of needless paper work and documentation,
* the reduction in printing, mailing, and distribution costs,
* the satisfactory efficiency and effectiveness in the process of ordering, purchasing, distributing, and storing individual piece of hand-crafted furniture,
* the avoidance of stock-out situations, and
* the increase in the volume of sales.

Intangible benefits related to its information system ALBERO may expect to occur over time can be defined as follows:

* the establishment of strategic relationships with the company´s stakeholders including customers, employees, suppliers, vendors, and other business partners,
* the satisfactory employee productivity,
* the superior customer support and service,
* the improved competitive position in the respective markets,
* the availability of accurate information critical to be used in the decision-making process,
* the round-the-clock availability of efficient data processing and storing tool,
* the timely response to stakeholders´ questions, comments, and concerns, and
* the achievement of the competitive advantage over the major rivals in the respective markets.

Tangible costs ALBERO may be confronted with due to its new information system may include:

* the purchase and installation of new hardware, software, and network resources,
* the establishment and operation of own information technology department,
* the adaptation of the physical site in which the information system will operate such as wiring or cabling,
* the training of end users being required to work with the information system, and
* the maintenance of the individual parts of information system to ensure its functionality.

ALBERO can face the following intangible costs associated with its new information system:

* the initial confusion, resistance, or inability of internal personnel to work with the new hardware, software, and network resources,
* the employee morale problem,
* the disruption in the business processes and operations due to the installation of new hardware, software, and network resources,
* the extensive dependency of all the business activities on the information system, and
* the potential breakdown of the entire information system.

*Obstacles and Risks*

By implementing a new information system, ALBERO exposes itself to the four major risks which can have a considerably negative impact on its existence on both the Slovak and Czech furniture markets. First risk ALBERO might have to deal with is the potential technical imperfection of its new information system leading to the number of technical problems to be resolved. Second risk ALBERO may face is associated with the possible failure of its new information system to accomplish not only the management´s expectations but also the predetermined set of basic reasons for its implementation. Third risk of installing a new information system solution proposed, designed, and developed by our company is related to the undesired loss of control over its information system security administration. Last but not least, ALBERO may be confronted with is the risk of exceeding the given timeframe and cost overrun.

**Systems Analysis Phase**

*Business Requirements*

ALBERO specified the six primary requirements to be met after the implementation of its new hardware, software, and network resources. Specifically, ALBERO want its information system to ensure:

* the enhancement of communication within the internal structure,
* the establishment of high quality cooperation and collaboration among the stakeholders including mainly customers, employees, suppliers, distributors, and other business partners,
* the reliable central database of information related to customers,
* the own website providing a customer service and support,
* the data processing and information storage accuracy, efficiency, and effectiveness,
* the smooth management of business activities performed in the individual furniture stores, in the central storehouse, and at the headquarters, and
* the time and cost savings in comparison to the traditional data processing procedures and communication methods.

**System Design Phase**

*Hardware Resources*

The selection of the hardware sources which satisfy the needs and wants of ALBERO by including one server, one workstation computer, four high-end notebooks, eight personal computers, three external hard drives, eight multifunctional appliances, three personal digital assistance, and sixteen smart phones, was based on the following specifications:

* an affordable cost,
* a high speed of accessing, gathering, processing, and sharing data resources,
* an easy operation, maintenance, and upgrade,
* a high level of compatibility, connectivity, and scalability, and
* a product of well-respected and high-quality brand.

Server – central (1)

Name: HP ProLiant ML370 G6 Special Tower Server

Processor number and name: 1 Intel Xeon E5530 (4 core, 2.40 GHz, 8MB L3, 80W)

Standard memory: 6 GB

Memory slots: 18 DIMM slots

Network controller: GbE NC375i Multifunction 4 Ports

Storage controller: Smart Array P410i/512MB BBWC

Unit price: €1,723.50

Total price: €1,723.50 (Hewlett-Packard Development Company,

2010g)

Workstation computer – an information technology specialist (1)

Name: HP Elitebook 8740w Mobile Workstation

Operating system: Windows 7

Processor: Intel Core i7-640M

Display: 17.0-inch diagonal WSXGA+ WVA anti-glare

Memory: 4 GB 1333 MHz DDR3 SDRAM (1D)

Internal storage: 320 GB 7200 rpm 2.5-inch hard drive

Graphics: NVIDIA Quadro FX 2800M graphics

Features: Bluetooth wireless technology 2.1, integrated 2.0 MP

web camera, TPM 1.2 embedded security chip + HP

fingerprint sensor

Unit price: €1,783.50

Total price: €1,783.50 (Hewlett-Packard Development Company,

2010d)

High-end notebooks – a director, regional managers, and a network administrator (4)

Name: HP ProBook 4720s Notebook PC

Operating system: Windows 7

Processor: Intel Core i7-620M

Display: 17.3-inch diagonal LED-backlit HD+ anti-glare

Memory: 4 GB 1066 MHz DDR3 SDRAM (1D)

Internal Storage: 500 GB 7200 rpm 2.5-inch hard drive

Graphics: ATI Mobility Radeon™ HD 6370

Features: Bluetooth wireless technology 2.1 and integrated 2.0 MP

web camera

Unit price: €786.42

Total price: €3,145.68 (Hewlett-Packard Development Company,

2010e)

Personal Computers – logistics and finance employees, shop assistants, and stock-keepers (8)

Name: HP ProBook 4520s Notebook PC

Operating system: Windows 7

Processor: Intel Core i5-460M

Display: 15.6-inch diagonal LED-backlit HD anti-glare

Memory: 4 GB 1066 MHz DDR3 SDRAM (2D)

Internal storage: 320 GB 7200 rpm 2.5-inch hard drive

Features: Bluetooth wireless technology 2.1

Unit price: €524.00

Total price: €4,192.00 (Hewlett-Packard Development Company,

2010f)

External Hard Drives – a director and regional managers (3)

Name: My Passport Essential Hard Drive

Storage capacity: 500 GB

Data transfer rate: 60MBps

Host interface: USB 2.0

Compatibility: Windows XP, Windows Vista, Windows 7, and Mac OS,

Unit Price: €74.10

Total Price: €223.30 (Hewlett-Packard Development Company, 2010a)

Multifunctional Appliances – a headquarters and a storehouse (3)

Name: HP Officejet 6500A Plus e-All-in-One Printer - E710n

Functions: print, fax, scan, and copy

Connectivity: USB 2.0; Ethernet; build-in WiFi 802.11b/g/n

Compatibility: Windows XP, Windows Vista, Windows 7, Mac OS, Linux

Print speed: 31 ppm color and 32 ppm black

Unit Price: €111.14

Total Price: €333.42 (Hewlett-Packard Development Company, 2010b)

Multifunctional Appliances – stores (5)

Name: HP Photosmart C4795 All-in-One Printer

Functions: print, scan, and copy

Connectivity: USB 2.0 and built-in WiFi 802.11b/g

Compatibility: Windows XP, Windows Vista, Windows 7, Mac OS, Linux

Print speed: 23 ppm color and up to 29 ppm black

Unit Price: €44.45

Total Price: €222.25 (Hewlett-Packard Development Company, 2010c)

Personal Digital Assistants – a director and regional managers (3)

Name: BlackBerry 9700

Display: 480 x 360 pixels

Memory: 256 MB onboard and 2 GB media card

Operating system: BlackBerry OS

Functions: 3.2 MP camera, video recording, Wi-Fi, GPS, 3G network

support, navigation, and qwerty keyboard (BlackBerry, 2010)

Unit Price: €439.00

Total Price: €1,317.00 (Slovak Telecom, 2010)

Smart Phones – a headquarters, a storehouse, stores, and drivers (16)

Name: Nokia E52

Display: 240 x 320 pixels

Memory: 60 MB onboard

Operating system: Symbian 9.3

Functions: 3.2 MP camera, video recording, Wi-Fi, 3G network, bluetooth

Unit Price: €239.99

Total Price: €3,839.84 (Nokia, 2010)

*Software Resources*

Although the operating system software – Windows 7 – was preinstalled in all the computer system purchased, the additional software resources of ALBERO including a server suite to be run on the central server, thirteen packages of software suites to be installed on all the computer systems, and security software to be provide a protection to all the computer systems were selected on the basis of the following criteria:

* a high level of security of data transmission,
* a friendly graphical user interface, and
* an easy operation, maintenance, and update.

Server Suite (1)

Name: Windows Small Business Server 2009

Unit price: €1,004.50

Total price: €1,004.50 (Microsoft Corporation, 2010b)

Software Suites (13)

Name: Microsoft Office Professional 2010

Programs included: Word, Excel, PowerPoint, Outlook, OneNote, Publisher,

and Access

Price per one life-end license: €699.00

Total price: €9,087.00 (Microsoft Corporation, 2010a)

General-Purpose Application Software – Security Software (13)

Name: Eset Smart Security Business Edition

Total price per one-year license: €37.96 for all the thirteen computers (ESET, 2010)

*Network Resources*

Since the individual facilities of ALBERO are not situated in the single physical location rather they are scattered throughout the territory of the Slovak and Czech Republic, the whole ALBERO´s information system would be interconnected using the Internet technology in order the ALBERO´s data accessing, gathering, processing, sharing, and storing tasks, chain of communication, and internal cooperation would be feasible. The internet connection provided on the basis of the two-year contract with one of the internet providers – Orange – operating in the Slovak as well as Czech Republic would be separately installed and put into practice in the ALBERO´s headquarters, the central warehouse, and the five stores. Since the contractual agreement among Orange and ALBERO covers the installation of necessary appliances such as cables, switches, and routers, there is no need for ALBERO to deal with their selection, purchase, and implementation. The criteria which were considered by ALBERO in the process of selecting an internet provider included:

* a speed of data downloading and uploading,
* a volume of data transmission,
* a cost, and
* a length of contractual agreement.

Internet Connection (7)

Name: FiberNet Business

Volume of data transmission: unlimited

Speed of data downloading: 50 Mbit/s

Speed of data uploading: 10 Mbit/s

Price per one location/year: €478.80

Total price: €3,351.60 (Orange, 2010)

*Cross-functional System Solution*

Since its primarily goal is to achieve a permanent position on both the Slovak and Czech furniture markets with the perspective of becoming a market leader by attracting new customers and retaining the old ones on a constant basis, ALBERO made a request to include customer relationship management into its information system in order to be able to establish a strong customer focus. The cross-functional system solution our company recommends to ALBERO is a well-respect product of Maximizer Software named as Maximizer CRM 11 Entrepreneur Edition which consolidates all the available data resources associated with the customers into a single multifunctional historical database. This database run on the central server and integrating such “business tools“ as “Microsoft Outlook, Exchange and Office” can be instantly accessed “through a mobile device, online, or in the office” (Maximizer Software, 2010b). As a result of using this customer relationship management software, the ALBERO´s management can make qualified “decisions on everything from cross-selling and up-selling opportunities to target marketing strategies and effective problem resolution” (Maximizer Software, 2010b).

Customer Relationship Management Software (1)

Name: Maximizer CRM 11 Entrepreneur Edition

Price per one life-end license: €189.00

Total price: €189.00 (Maximizer Software, 2010a)

*Network Model*

The information system would have a server as a central point where the ALBERO´s website would be hosted, cross-functional system solution would be stored, data resources and information products from all the computer systems would be integrated. This central server would be approached by all the computer systems located in the ALBERO´s facilities including the headquarters, stores, and the warehouse through the internet network in order to access, gather, process, produce, distribute, and share data and information. Also, the individual computer systems would communicate and collaborate together via the Internet.

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Headquarters

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Store 1

Store 2

Store 5

Store 4

Warehouse

*wireless-connection-icon.jpgwireless-connection-icon.jpg*

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*wireless-connection-icon.jpgwireless-connection-icon.jpgwireless-connection-icon.jpg*

Store 3

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*Cost Overview*

ALBERO required its new information system to be proposed, purchased, and installed at the overall cost not exceeding €33,000. As it can be seen in Table 1 below, this requirement would be exceeded by almost €3,199.95 in all likelihood. The reason for this potential cost overrun is caused by the fact that our company made an attempt to satisfy all the criteria associated with the features and functions of purchased hardware, software, and network resources, which were predetermined by ALBERO, at the same time.

Table 1

|  |  |  |
| --- | --- | --- |
| **Estimated Budget for the ALBERO´s Information System** | | |
| **Category of Resources** | **Items** | **Total Price** |
| Hardware | Server | € 1,723.50 |
| Workstation computer | € 1,783.50 |
| High-end Notebooks | € 3,145.68 |
| Personal computers | € 4,192.00 |
| Personal Digital Assistants | € 1,317.00 |
| Smart phones | € 3,839.84 |
| External hard drives | € 223.30 |
| Multifunctional appliances | € 555.67 |
| Software | Server suite | € 1,004.50 |
| Software suites | € 9,087.00 |
| Security software | € 37.96 |
| CRM software | € 189.00 |
| Network | Internet connection | € 3,351.60 |
| Miscellaneous | Preparatory work | € 800.00 |
| Installation | € 1,350.00 |
| Training | € 500.00 |
| Documentation | € 1,100.00 |
| Website development | € 2,000.00 |
| **TOTAL** | | **€ 36,199.95** |

**Implementation Phase**

*Implementation Overview*

The new information system of ALBERO would be developed, purchased, and implemented within the period of six consecutive weeks starting in January 10, 2011 and finishing in February 21, 2011. Based on this time schedule, it can be seen that the timeframe appointed by the information system requestor – ALBERO - would not be successfully accomplished. Rather, it would be probably upped by fourteen days due to the complexity of the ALBERO´s requirements associated with its new information system. The specific activities which would be covered during the realization of the ALBERO´s new information system as well as their expected duration are covered in the Table 2 below.

Table 2

|  |  |  |  |
| --- | --- | --- | --- |
| **Estimated Time Schedule for the ALBERO´s Information System** | | | |
| **Implementation Activity** | | **Starting Date** | **Finishing Date** |
| Familiarization with the ALBERO´s background, actual situation, needs, and requirements | | January 10, 2011 | January 12, 2011 |
| Website development and launch | | January 13, 2011 | February 9, 2011 |
| Proposal | Hardware resources | January 13, 2011 | January 18, 2011 |
| Software resources |
| Network resources |
| Acquisition | Hardware resources | January 19, 2011 | January 28, 2011 |
| Software resources |
| Network resources |
| Installation | Hardware resources | January 29, 2011 | February 3, 2011 |
| Software resources |
| Network resources |
| Training | IT employees | February 4, 2011 | February 8, 2011 |
| End users |
| Test run | | February 9, 2011 | February 14, 2011 |
| Documentation | | February 15, 2011 | February 21, 2011 |

*Conversion Type*

Since ALBERO is a start-up company requesting a newly developed information system, which would neither completely nor partially replace the unexisting present information system, any conversion process is necessary to be undergone. Thus, the information system of ALBERO would be introduced step by step without a need to convert data resources and instruct internal personnel from all the departments being subject to the implementation of a new information system about the upcoming changes in their communication, cooperation, and data-processing tasks.

**Evaluation Phase**

The individual parts of ALBERO´s new information system were proposed, purchased, and implemented in order to meet the entire set of criteria determined by the ALBERO´s top-level management. However, whether the ALBERO´s newly designed information system has a capacity to fulfill all the requirements related to its basic features, tasks, and roles or not can be determined only by the personnel including the information technology specialists and the end users using it on an everyday basis. Therefore, the overall success of our information system design project would largely depend on the results of the regularly-repeated written evaluation of hardware, software, and network resources making up the ALBERO´s information system. This assessment of hardware resources based on such factors as “performance, cost, reliability, compatibility, technology, ergonomics, connectivity, scalability, software, and support”, software resources on the basis of such factors as “quality, efficiency, flexibility, security, connectivity, maintenance, documentation, and hardware” and network resources based on such factors as connectivity, speed of transmission, and functionality would be done by the ALBERO´s internal personnel having the daily use of information system in their job descriptions (O´Brien & Marakas, 2006). Subsequently, this employee evaluation would serve our company as a mean to find out whether there is a need to make some inevitable alternations to the ALBERO´s new information system to be able to help ALBERO to accomplish its primary goal of establishing a highly effective and efficient communication tool, collaboration mean, and data accessing, gathering, processing, and sharing system for its stakeholders or not.

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| Assessment Rubric: **Information Systems Design Project** | | | | | |
| Undergraduate Percentage Scale: | | 0.00 - 58.74% | 58.75 - 76.24% | 76.25 - 93.74% | 93.75 - 100% |
| Undergraduate Scaled Score: | | 0.0 - 0.6 | 0.7 - 2.1 | 2.2 - 3.5 | 3.6 - 4.0 |
|  | % of Grade | Below Standard | Approaching Standard | At Standard | Exceeds Standard |
| Completeness | 50% |  |  |  |  |
| Seamless flow of personal insights for integration | 10% |  |  |  |  |
| Logical development and recommendation | 20% |  |  |  |  |
| Proper grammar, spelling, and punctuation | 10% |  |  |  |  |
| APA referencing Quality and use of outside sources | 10% |  |  |  |  |
| **TOTAL** | **100%** |  |  |  |  |