Teaching Case

Choosing an ERP-type System for a Belarus Enterprise

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ABSTRACT

The case addresses one of the basic questions on managing information technology infrastructure in a less-developed economic region. Alex Yamkovsky, the Director General of Milavitsa, is faced with the decision on the choice of an ERP system. He has essentially three options:
- Option 1: Build Your Own System
- Option 2: Buy From a Regional Vendor
- Option 3: Buy from a Global Vendor

The case provides background information on Milavitsa and Enterprise Resource Planning systems in general. Students are asked to place themselves in the position of Director Yamkovsky and select the best choice for the particular setting of Milavitsa and the economy of Belarus as a whole.

Keywords: Enterprise system, ERP, Eastern Europe, Belarus, Teaching Case

1. INTRODUCTION

Alex Yamkovsky (i) sat down at his recently acquired desk of Milavitsa Director General (ii). He was tired. It had been yet another long day on the job – a day in which he was forced to deal with the daily problems of running an entirely, private and therefore "rational" enterprise in an economy that had been neither private nor rational for years – the economy of the Republic of Belarus.

Following a 2-year long stint as member of the Supervisory Board of Milavitsa, Alex was offered the job of Director General. He had been involved in various private business initiatives for many years now. Those, however, were fairly small in size and primarily academic in orientation. This job was as real world as it got. Upon assuming his position in mid 2002, Yamkovsky would have to lead a sizable enterprise through inevitable restructuring, reshaping and reforming. He would have to not only think and theorize, but to act and to implement.

Yamkovsky promised himself that by the end of this week he would finally resolve the issue of the ERP system. The question had been left hanging for much too long. It wasn't the sort of question that required immediate attention – Milavitsa has functioned fairly well without such a system, and some have argued that in conditions of a closed economy it could continue to function in the same way for years to come. Yamkovsky knew, however, that this was not so. In a relatively small country such as Belarus, enterprises the size of Milavitsa must turn to exports to continue to grow – domestic market being too small – and exports mean real competition with global firms without the cushion of state protection. He was convinced that, in the long-term, if Milavitsa were to survive it would have to transform itself into a viable, modern firm with capable personnel and with a technology infrastructure that gave it a chance to compete. To him the question was no longer whether to implement such a system; the question was which system to choose and how to go about introducing it and implementing it in the challenging environment of Milavitsa.

2. MILAVITSA

Milavitsa is a company with a fairly long – for this part of the world – tradition. A Frenchman named Francois Tourne founded it in Minsk as a small clothing factory at the beginning of the 20th century. Following the October Revolution, the factory was nationalized and in 1929 renamed first as Beloruska and then as Frunze – in honor of the Georgian Communist. In 1970, as part of the ongoing industrial concentration reforms, it was merged with clothing association Komsomolka. In 1991, the Minsk

division of Komsomolka was spun off and renamed Milavitsa.

Over time, Milavitsa began to specialize in women's lingerie products and corsetry goods. By 2002, its product line included fine lace, stretch lycra and meryl finished goods for which the firm has received numerous Belarus quality awards.

In 1992, already in newly created independent Republic of Belarus, Milavitsa was privatized and transformed into a closed joint-stock company. Its ownership structure evolved to include:

- the Italian firm Ilyuna (15% of shares) – with which Milavitsa has established cooperative production ventures
- the European Bank for Reconstruction and Development (15% of shares),
- retired former employees of Milavitsa (20% of shares), and
- current employees of Milavitsa (50% of shares the largest single investor holds about 5% of stock).
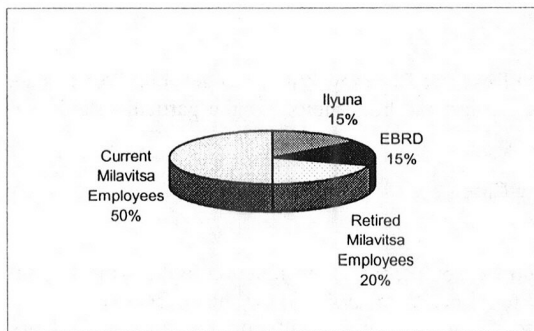

Figure 1: Milavitsa Ownership Structure (2002)

As can be seen from Figure 1, foreign companies owned 30% of Milavitsa shares and former and current employees of the firm held 70% of shares.

At the end of 2001, Milavitsa employed approximately 2390 people, of which 2168 worked in manufacturing (among those 1828 line workers, 167 managers, 146 specialists and 10 service personnel). It operated stores in Minsk (two), Brest, Vitsyebsk, Homel, Hrodnoa and Mahilyow (See Figure 2).

The offices of its official distributors were located in Moscow (two), Tymen, Ufa, Novosibirsk, Barnaul, Borisoglebsk, Rostov-on-Don, Novorossiysk, Sankt Peterburg, Tomsk, Omsk, Novgorod, and Pyatigorsk.

The markets for Milavitsa products could be divided into four types: Belarus, Russia, other former republics of the USSR and the rest of the world. The 2001 revenue stream weight was as follows:
 Belarus: 28.6%

- Russia: 33.2%
- Other former USSR: 2.4%
- Rest of the World (production sold under brands Ilyuna and Triumph) 34.1%

Figure 2: Map of Belarus (CIA 2004)

Milavitsa buys its production supplies – mainly high-quality fabrics – from many different sources. In 2001 its supplies came from Latvia (50%), Italy (25%), Russia (10%), Germany (4.5%), France (2%), Spain (1.5%), and Korea (0.5%). The number of suppliers was also substantial for in 2001 Milavitsa imported from 20 countries using 42 different vendors.

2.1 Organizational Structure
The formal organizational structure of Milavitsa has been evolving over the years. It has not yet reached its final form in 2001 and the expectation was that additional changes would be needed. Figure 3 shows the outline of top management structure in 2001.

The operational organizational structure consisted of six production and five support departments. The production units were:
1) The preparation department (No2)
2) The cutting department (No3)
3) The sawing department (No5)
4) The sawing department (No6)
5) New technologies
6) Consumer goods.

And the support units included:
1) Accessory department
2) Construction department
3) Maintenance-mechanical department
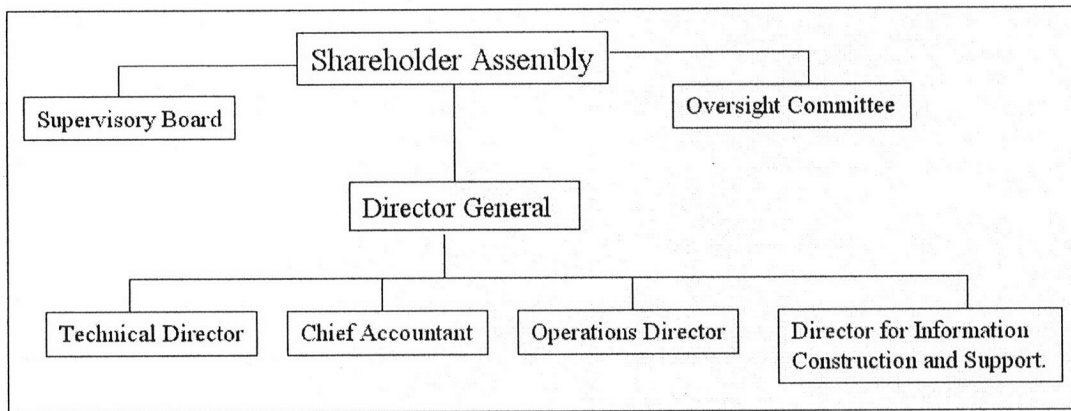4) Transport department
5) Warehouse, including packing department.

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Figure 3: Milavitsa Top Management Organizational Structure

2.2 Information Technology Infrastructure

The Information Technology Department at Milavitsa was headed by Vladimir Pavlov – a 50-year old veteran of state-e-sponsored, centrally-directed computerization campaigns that characterized the Soviet economy in the 1970s and 1980s. Although ethnically Russian, Pavlov decided to stay in Belarus after the Republic broke away from the Soviet Union. "*This is home now*," he would sometimes say.

2.2.1 Software

Milavitsa's information system infrastructure does not significantly differ from other firms in the region. Its computers are running primarily Windows operating systems (95, 98, 2000, NT and XP), although DOS and UNIX are also used as well. Most of the applications are of file-server architecture. Database Management Systems functionality is provided by FoxPro 2.6 and MS SQL. FoxPro 2.6, Assembler, and Delphi are the principal system development tools.

Much of what is currently used had been developed internally, often by teams led by Pavlov. A program to support accounting functions called ASU SP ZAO Milavitsa, was first developed in 1972. In 1988, the program was modernized and adapted to the PC environment. The strictly accounting package was expanded to include support for processes of line/functional management, decision-making for production quality assurance, documentation and machine tracking of production, calculation of production losses as well as calculation of normative costs. Other application programs supporting various information system functions included:

- ASSYST: a Computer-Aided Design program;
- BEST-4: for billing and currency as well as some accounting;
- DEKLARANT: to facilitate the filling-out of customs forms;
- A Program to support company's dining services.

2.2.2 Hardware:

On January 1, 2002 there were 193 computers at Milavitsa, of which 23 were PC-486 (see Table 1). In 2002, 25 computers were scheduled to be replaced and upgraded. Plans also called for modernization of the server (HP Netserver).

Date Introduced	Number	Machines with processor speed range
1991	14	486DX66-80
1992	4	486DX4-100
1993	15	486DX4-100 and Pentium 100
1994	9	Pentium 166-400
1995	11	Pentium 166-400
1996	36	Pentium 133-700
1997	47	Pentium 166-700
1998	16	Pentium 233-700
1999	10	Pentium 233-700
2000	6	Pentium 233-700
2001	22	Pentium 400-800

Table 1: PCs Introduced at Milavitsa by Age and Class

2.2.3 Network

In 2001, Milavitsa's data networking was supported by an Ethernet LAN based on Novell Netware 4.11 and Windows NT Server. Most of the cabling between workstations was UTP-5 and fiber optic cable was used between buildings. There was a server connected to the Internet via a modem (33 kbps), to which 33 workstations were linked.

3. WHAT ARE ERP SYSTEMS?

Historically speaking most organizations have developed their information systems in a piecemeal fashion. A typical case had one department, usually an information-intensive department like finance or accounting, develop an information system to address some specific need. The

system in question would be developed independently of other departments without fully understanding the impact on the whole enterprise. The proliferation of separate systems, over time, would usually lead not only to data duplication, but also to ineffective interchange of data, e.g. between operations and finance. In the typical case, data would often be manually retyped, making it very difficult to establish timely, enterprise-wide reporting.

An ERP creates an integrated system that provides the capability to move data between organizational units and to process data at the enterprise level. With one set of communication standards and interfaces, data flows easily from one department to another and if appropriate, agreements are made with suppliers and customers to outside organizations as well.

If one examines major information technology (IT) projects in large firms over the last decade, ERP projects predominate. The benefits of such systems are substantial. The fast-pace of innovation in most industries of today requires that lead-times to product introduction be radically reduced. Such reductions are not possible, unless traditional manual processing is automated, and unless decisions can be made based on very current (e.g., up-to-the-hour), real-time data. Management literature is replete with examples of positive ERP effects: Cisco Systems, (Nolan 2001) Wal-Mart, and Microsoft, to name but a few (Davenport 2000).

Management literature also has examples of spectacular failures (Davenport 1998; Saran 2002). The scope of ERP projects is immense, since they involve not only the replacement of organizational information systems, but also business process reengineering. In other words, ERP projects require adaptation or replacement of organizational processes to reflect the processes that the ERP system espouses. Changing how business is done, unless properly prepared and thought-through can cripple a firm's operations. ERP implementation fail not because the software is bad but because the marriage of processes that come with software and company's established processes often simply does not work.

Cost Category	Average Cost	Cost Range
Consulting	30%	20-60%
Hardware/Infrastructure	25%	0-50%
Implementation Team	15%	5-20%
Training	15%	10-20%
Software	15%	10-20%

**Table 2: Implementation Cost Breakdown.
Source: (Mabert, Soni et al. 2001)**

Another major risk factor to ERP failure is cost. ERP does not come cheaply. Enterprise Resource Planning systems are sometimes categorized into tier 1 and tier 2. Tier 1 consists of products sold by SAP (R3), Oracle, PeopleSoft,

and JD Edwards, usually to large, multinational firms. Tier 2 systems, or systems associated with Sage (Tetra), Exchequer, Scala and Microsoft (Axapta), are aimed at medium size enterprises. Tier 1 implementations can cost anywhere between 3,000 to 87,000 Euro and tier 2 implementations 1,000 to 50,000 Euro per seat of the final end-user. The final price includes various cost components. Table 2 lists these components as well as their average cost breakdowns and breakdown cost ranges.

4. GENESIS OF ERP AT MILAVITSA

Discussions about the need to introduce some type of ERP system began in 1999. The principal motivation was the inability of top management to answer questions about finances and operations in acceptable periods of time. The data did exist but could not be retrieved with sufficient ease nor could it be easily combined with other data sources to create a composite picture of organizational performance.

Vladimir Pavlov, the head of Milavitsa's Information Technology Department, was responsible for collecting information on the different systems potentially available for implementation. During the next two years various systems were analyzed both theoretically and via practical demonstrations. Among those which received special attention from Milavitsa's IT Department were:

1. Integrated System for Management Automation "Galaktika"
2. System Archipelag
3. System for Enterprise Management "BEST-PRO"
4. System 1C

All of the above packages were systems which had local representation either in Belarus itself or in neighboring Russia. This was important to Pavlov. He felt that ERP systems were of no use unless they were properly implemented and that can not happen unless there are people accessible locally to do the necessary work. As Pavlov's research had shown, the world-renown companies selling premier tier 1 and tier 2 ERP systems did not have local representation because they did not consider the Belarus market attractive enough.

The systems studied by Pavlov fell in the sub-tier 2 category. They were relatively cheap and local experts were readily available for consultation throughout system implementation and also as needed later. However, they also had serious shortcomings.

For one thing, none of the reviewed systems fit Milavitsa's processes. Milavitsa is a manufacturer of lingerie and these systems were initially designed either for manufacturing enterprises in a different industry, or for an abstract, general-purpose enterprise. To buy one of these systems would mean significant development work to customize the code already written.

The need to customize what was available led Pavlov to the conclusion he made known to his associates. Instead of changing a packaged system that was already written, it would be better for Milavitsa to build a system from scratch using locally available expertise. Such a system would be designed specifically to fit Milavitsa's processes. It would not be that expensive, and one could even sell it later to other enterprises, thus creating a revenue stream. Pavlov even picked a local software vendor, BellHard, ready and willing to undertake such a venture with Milavitsa.

5. THE OPTIONS

Upon starting his new job as Director General, Alex Yamkovsky met with his IT staff and other informed associates on the ERP question. The opinions varied. His own IT people were pushing for a built-it-yourself solution. His contacts with local software vendors favored one of the regional ERP products, often the one they had a positive experience with. A meeting with a representative of the European Bank for Reconstruction and Development (EBRD), a large Milavitsa shareholder, resulted in yet another option. EBRD has stated that it would prefer an established and standardized ERP-type system from one of the large Western software vendors to a relative local unknown.

As Yamkovsky considered all of the collected information, it became clear to him that there were essentially three options to choose from:

5.1 Option 1 -- Build Your Own System
This is the option favored by Milavitsa's IT Department. Its overriding advantage was the freedom to create a system that would closely fit Milavitsa's business processes. In contrast to other solutions, it would be relatively inexpensive, however, it would take more time (maybe significantly more) to implement. If successful the outcome could lead to another revenue stream from royalties for software sales.

5.2 Option 2 -- Buy from a Regional Vendor
Successful ERP implementations require close, sometimes extended collaboration between the software vendor and his implementation team and the customer. Collaboration cannot take place unless the software vendor has regional representation. In mid 2002, the established ERP vendors did not consider the Belarus market attractive enough to invest significant resources in distribution and technical support facilities.

Buying from a regional vendor has the overriding advantage of having local talent readily available. The main disadvantage is that available systems are not established and therefore cannot be used as platforms for collaborative ventures with large western firms. The option would require that Milavitsa processes be adapted to conform to choices made by software designers. Furthermore, as a rule, regional vendors cannot be considered financially stable.

They are here today, but could be gone tomorrow leaving the customer's ERP unsupported.

5.3 Option 3 -- Buy from a Global Vendor
This option is the reverse of option 2 when it comes to advantages and disadvantages. A system from a global vendor offers stability and established norms, but does not offer easy access to qualified personnel. Price wise, it is clearly on the expensive side, but the functionality is greater as well. A solution from a global vendor would require that Milavitsa change its business processes to conform to best-practice examples that global vendors implement as part of their packages. This is risky, but in the long run potentially beneficial. Milavitsa's processes could use some adaptation to reflect the experience of global firms.

As the decision time neared, Alex Yamkovsky pondered his choices. What would you do if you were in his position?

6. ACKNOWLEDGEMENTS

7. REFERENCES

CIA Facto (2004). "Belarus." accessed at http://www.cia.gov/cia/publications/factbook/geos/bo.html on August 29, 2004.

Davenport, T. H. (1998). "Putting the Enterprise Into The Enterprise System." Harvard Business Review July/August: 121-131.

Davenport, T. H. (2000). Mission Critical: Realizing the Promise of Enterprise Systems. Boston, Massachusetts, Harvard Business School Press.

Mabert, V. A., A. Soni, et al. (2001). "Enteprise Resource Planning: Common Myths Versus Evolving Reality." Business Horizons: 71-78.

Nolan, R. L. (2001). "Cisco Systems Architecture: ERP and Web-enabled IT," (Revised October 15, 2001) Harvard Business School.

Saran, C. (2002). "ERP errors cost Agilent $70m". Computer Weekly 360, 20 August 2002.

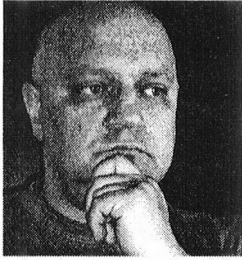## 8. ENDNOTES

(ⁱ)The names of individuals appearing in this case have been changed.

(ⁱⁱ)The position of Director General is roughly equivalent to that of Chief Executive Officer.

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