

**Information Technology and Entrepreneurship:
Three Cases from Poland***

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Abstract

Many Polish entrepreneurial companies have completed organizational restructuring which was typically accompanied by the implementation of information technology (IT). Our study explores how IT lends support to entrepreneurial activities and helps Polish companies compete in a market economy. First, we gathered data on the nature and extent of organizational IT use in three small Polish companies and on the intensity of entrepreneurial activity. After observing a positive association between the use of IT and the intensity of entrepreneurial activity our study shows how they both contribute to a company's success. Furthermore, our study finds support for the assertion that entrepreneurial intensity and the strategic use of IT arise from a complex of similar factors. The findings reported in this article should be of interest to academics as well as business practitioners.

1. Introduction

Dramatic political change has taken place in Eastern European countries and the former Soviet Union since 1990. These changes in turn stimulated economic liberation and a concomitant transformation from centrally-planned to market-oriented economies. As a consequence, Eastern European firms are gradually joining the global market place (Kozminski, 1993; Rondinelli and Yurkiewicz, 1996).

Eastern European countries made these changes at different rates. Several Eastern European countries are presently operating market-oriented economies, whereas others are still in the early stages of economic transformation. Poland, because of its head start during the 1980s, enjoys better economic conditions than many other Eastern European countries which started their economic transformation later.

Deans and Kane (1992) found that information technology (IT) plays an indispensable role in making a company successful under uncertain and turbulent economic conditions. Because the economic events sweeping Eastern Europe are fundamental and far-reaching, the study of IT is particularly relevant (Lee and Agovino, March 1996). Eastern Europe - in particular Poland, Hungary, and the Czech Republic - can be viewed as gateway countries to Russia. Poland is economically and strategically an important member among these three countries, each of which have chosen different economic strategies.

Because it started economic transformation and technological modernization before most other Eastern European countries, studying Poland's situation will be instructive (Kozminski, 1993). Lessons learned during Polish economic transformation might help other Eastern European countries avoid otherwise inevitable mistakes (Sulc, 1994; Wilczynski, 1994). Furthermore, Poland's economic

transformation occurred relatively recently (Katz and Rittenberg, 1992). This implies that this historic event is still fresh in the minds of the Polish entrepreneurs. Hence, we might expect to retrieve fresh and rather accurate accounts from our informants. It is important to note that turbulent economic conditions bewildered many Eastern Europeans, including the entrepreneurial owners of small private businesses. Small business owners were challenged to assemble business strategies in response to uncertain and dramatic political and economic changes. During the early days of economic transformation, starting new companies was the order of the day, and over one million individuals went into business for themselves. Even though many of these early attempts failed, the firms in our sample did successfully weather the economic ups and downs (Johnson and Loveman, 1995). Studying the companies that successfully adapted to the profound economic transformation is useful. Specifically, our research question is ? What are the roles of entrepreneurship and IT in preparing Polish companies in particular and Eastern European companies in general for competing in the global economy?? First, we describe the experiences of entrepreneurs who started and currently direct small Polish-based companies, and the role IT plays in day-to-day operations. Second, we gather data on the frequency and degree of entrepreneurial activity which are then combined into a single measure that reflects the intensity of entrepreneurial activity (Morris, and Sexton, 1996). Next, the intensity of entrepreneurial activity is used to classify three small, innovative Polish companies. Entrepreneurial activity intensity is then linked with organizational informatization expressed in terms of the extent and purpose of IT use.

2. Research Method and Design

2.1 Qualitative Methods

Because of our study's exploratory purpose we used an interview-based qualitative method

to investigate 1) the conditions and individual actions surrounding the formulation and execution of entrepreneurial initiatives, 2) the extent and function of IT use, and 3) the relationship between entrepreneurial intensity and the use of IT in three Polish companies (Cathering, et al., 1994; Gummesson, 1991; Remenyi and Williams, 1996; Walsham, 1995). We investigated these three companies to gain a better understanding concerning IT-supported entrepreneurial initiatives.

Cavaye (1996) provides additional insight into the use of qualitative research methods. He points out the great many alternatives - case studies for positivist and interpretivist goals, case studies for testing and building theory, case studies with single and multiple cases, and case studies using qualitative or mixed methods. Furthermore, Hartwick and Barki (1994) elaborate the differences between quantitative and qualitative research by claiming that the former is mostly confirmatory, whereas the latter is mostly exploratory.

Qualitative research is exploratory - rather than studying large randomly selected samples, exploratory analysis uses samples often consisting of one to several cases. Instead of using test statistics based on assumed theoretical probability distributions, exploratory analysis generally uses narrative analysis, the results of which are presented in the form of tables or graphical displays (McNeil, 1977). The qualitative researcher approaches the situation under study emically, that is to say as an involved insider (Hodder, 1994). Qualitative research tends to be descriptive and seeks to identify, rather than test, variables which impact the situation at hand. Qualitative research aims for experiential *understanding* of human experience and connotes understanding complex relations, based on direct interpretation of narratives (Stake, 1995). Such understanding requires persons most qualified to interpret the narratives arising in a given context (Silverman, 1993; Stake, 1995). In short, a qualitative research method best suited our research purpose: to determine whether an

association exists between IT and entrepreneurial activity.

2.2 Entrepreneurship

Many factors have been identified as being associated with entrepreneurship. For, example, entrepreneurial individuals combine many personality traits - innovativeness, risk taking, proactiveness in the sense of doing what is necessary to realize their ideas combined with shouldering responsibility for success or failure (Covin and Slavin, 1989; Morris and Sexton, 1996). Second, Gardner (1994) emphasizes the central nature of innovativeness in the successful realization and marketing of an idea into a viable product. Stearns and Hill (1996) conclude that innovativeness required varies greatly from one business situation to another (Table 1). Third, as pointed out by Carland et al. (1988) assuming risk is central to entrepreneurial action. However, these authors also state that the is moderated by the ability of many entrepreneurs to take calculated risks. Fourth, the introduction of new goods or services is essential to entrepreneurship. By creating and marketing new goods and services the entrepreneur adds value for the ultimate customers. Fifth, the design and implementation of new methods of production is often indicated by the nature of the new products and services. The novelty of new products or services implies that they have never before been produced and, hence, it is likely that no existing production method exists for production. Sixth, the introduction of new products, new methods of production, and marketing often necessitates new organizational forms. Seven, the realization of unmet customer needs motivates the entrepreneur to action. However, the success of the new product or services critically depends on convincing customers that the need is real. This in turn implies the need for creating and subsequently exploiting new markets (Gardner, 1994).

Finally, IT systems affects a firm? s products and services, markets, product cost, and product

differentiation. Thus, the success of innovative firms critically depends on the implementation and creative use of IT (Deans and Kane, 1992). In conclusion, entrepreneurship is defined as the process of creating value by combining a unique mix of the aforementioned concepts in order to take advantage of an opportunity (Morris and Sexton, 1996).

Morris and Sexton (1996) use the aforementioned dimensions to formulate frequency and degree of entrepreneurship which are then combined into entrepreneurial intensity. Entrepreneurial frequency reflects the number of new products or services introduced by the firm, the number of new production processes it started, or the number of new markets which it entered. Degree of entrepreneurship reflects the extent to which the entrepreneurial behavior is innovative, risky, or proactive. Frequency and degree of entrepreneurial behavior lie along a continuum ranging from "low" through ? medium? to "high" (Table 2). Of particular interest are three combinations of frequency and degree of entrepreneurial behavior which form the measures of entrepreneurial intensities.

An infrequent introduction of a new process, product, or service combined with a low exposure to risk exemplifies the traditional organization which is engaged in entrepreneurial behavior of low intensity (Table 2). An organization engages in entrepreneurial activities of high intensity when it introduces many new processes, products, or services which are extremely innovative, or risky, and when their introduction represents proactive behavior. Such organizations are termed revolutionary (Table 2). An organization engages in entrepreneurial activities of medium intensity when it introduces new processes, products, or services which are innovative, risky, but their introduction represents proactive behavior of a moderate sort. Such organizations are termed dynamic (Table 2). Morris and Sexton's (1996) research suggests that entrepreneurial intensity, i.e.,

the combined effect of frequency and degree of entrepreneurship, is positively associated with organizational performance measures such as change in sales, profits, customer base size, and employment.

2.3 Company Selection

We identified a preliminary set of target companies in Gdansk, an important industrial region in Poland. We wished to study the nature of these small, aggressive, innovative, and entrepreneurial companies. We were particularly keen to investigate small privately-owned companies because these, we conjectured, were more likely to represent innovative entrepreneurial activities than their larger counterparts. Typically, medium and large privately-owned companies were formerly state-owned and as noted by Slay (1994), it was not unusual that privatized state-owned companies came under the control of the former *nomenclatura*. Therefore, we did not expect that privatization would necessarily lead to innovative company behavior. In short, we were interested in what is referred to in Eastern Europe as "small" privatization efforts (Katz and Rittenberg, 1992).

During a four-week period we interviewed the chief executives (CEOs) and managers of six organizations in the greater Gdansk area. The interviews were conducted in English, lasted on average two hours, and were audio taped and later transcribed into written text for further analysis. We used an interview script to ensure that no topics we considered important were left unaddressed.

3. Description of Three Polish Companies

All companies were located in older buildings ranging from family homes to small industrial buildings. In spite of their stark and somewhat tumbled-down exteriors, the office buildings were all renovated on the inside and attractively decorated. It was evident that the companies had made

considerable investment in personal computers, office furniture and stationery. Company employees, including the CEOs, were invariably professional, polite, and patient. The majority of company employees understood and spoke English well. There is general agreement among the Polish people that a good command of the English language is a prerequisite to business success and upward social mobility. The employees of the firms we interviewed enjoyed considerable freedom to arrange their activities and they shared this professionalism with the CEO: they took care of their outward appearance and dress, and they were dedicated to the organization. We learned that this professional demeanor and appearance are welcome changes from the situation that existed during the *ancien regime*.

IT forms an integral component of the customer services and managerial strategies of all companies studied, but the intensity of its use varies from one company to the next (Table 1, Row 8). For example, in the case of Kancelaria Notarialna, IT is of moderate importance for creating customer value and for improving organizational effectiveness (Table 1, Column 2, Row 8). In the case of Young Digital Poland IT is of considerable importance both for creating customer value and improving organizational effectiveness (Table 1, Column 3, Row 8). Finally, in the case of Doradca IT is extremely important for the creation of customer value, improving organizational effectiveness, and managing business risk (Table 1, Column 4, Row 8).

3.1 Kancelaria Notarialna

"Kancelaria Notarialna" is roughly equivalent to the American notary public. It combines aspects of an attorney at law, a title insurance company, and a notary public. A Polish notary public writes personal wills, settles inheritance claims, effects real estate transfers, confirms the authenticity of real estate titles, files transactions with legal authorities, and collects taxes levied against real estate

transfers and inheritance settlements (Table 1, Column 2). Kancelaria Notarialna's mission is to serve its clients honestly, impartially, reliably, effectively, efficiently, and accurately. Our informant indicated that Kancelaria Notarialna, which employs four partners, two legal trainees, and five support personnel, is one of the largest legal offices in Poland.

Prior to nationalization by the Communists in the 1950s notary public services were provided by independent companies. Nationalization meant that notary public services were located on the premises of courts of law. It implied that notary public offices were open to the public during the court's time schedule (from 9:00 a.m. to 3:00 p.m.). After the political and economic upheavals of 1989 notary public offices were privatized and many established independent offices away from courthouses to better serve their clients. In fact, Kancelaria Notarialna occupies two offices: one is located at the court and a second office, which is open for business six days a week from 9:00 a.m. until 6:00 p.m., is located on privately owned real estate in the City of Gdynia. Adding the second office represents a significant organizational change.

The junior partner provides the primary entrepreneurial impetus for the organization. Early on she conceptualized the need for providing computer-supported legal services. She stated:

? ...every document we prepare is different. [However] there are some parts which are identical...[we call] these templates [which] we save in a [computer-based] database...I [realized] that we needed [tools] to do the work faster and with less difficulty.?

According to our informant most notary public offices still prepare legal documents by typewriter. Thus from the point of view of the situation just described the step towards informatization is quite innovative, because other notary public offices continue to prepare documents in a traditional manner. Some economic risk arises from the lack of available off-the-shelf software

packages designed for use in legal offices because it means that Kancelaria Notarialna will have to develop and implement its own computer software. The software was ultimately developed by the cooperative effort of our informant and the son of one of the senior partners. Concerning software design our informant noted:

? I know that in the United States there is one [commonly] used legal software package which can be customized [to meet the needs for different legal offices]...[However Polish software houses] are not interested in us because [the market] is very small. [Software] development is very difficult for the [software designer] who lacks [legal] knowledge, the way we [work] because it is very specialized.?

IT has made important inroads into company operations and most documents now reside in a database which is available on the local area network (LAN). The company operates two LANs, one in its Gdynia office and the second in its office on the court's premises. The initial intent was to connect the two LANs. This plan had to be abandoned because of the decrepit state of phone lines (Chalmers et al., September 1996).

Informatization was accompanied with some economic risk - our informant estimated that Kancelaria Notarialna spends 25% of annual revenue on hardware, software development, and general maintenance. This figure includes the expense of retaining a computer service company. However, the 25% figure excludes the organizational cost of user training in the use of hardware and software. The reliance on IT has caused an unexpected problem. Our informant commented:

? ...we called the [service] company. They sent a...[service engineer] who took an entire afternoon to find the [problem]. We lost the whole day. We [worked around the problem] by using typewriters...[but] if we could have used our LAN we would [have had] no possibility

to goof up the document.?

These quotes reveal the extent of office informatization. We conclude that Kancelaria Notarialna embarked on a moderately innovative and somewhat risky development. Kancelaria Notarialna introduced several new processes and customer services which were accompanied with small incremental increases in risk. Kancelaria Notarialna actions reflect a low frequency and degree of entrepreneurship. Hence, Kancelaria Notarialna is located in the lower left-hand cell of Table 2.

3.2 Young Digital Poland

Young Digital Poland was founded in 1990 by four university-trained entrepreneurs who are electronic engineers with a background in acoustics (Table 1, Column 3). The company's first product, a computer-based speech analyzer, was a natural extension of the research the four partners had done at the university. However, market saturation for computer-based speech analyzers was soon reached and the partners needed to innovatively rethink their business strategy. According to one partner:

"The first product [for which] we prepared software and hardware was a speech analyzer which was sold mostly to Polish universities...Then we started to think about another product which could be sold much more widely than only to scientific centers and universities.? Our goal was to join...computers and sound into one product. Our main [products are now] software, hardware, [and] electronics for learning languages, speech therapy, and professional acoustic measurement.?"

The above quote suggests that Young Digital Poland was very successful in introducing innovative new goods and services. The new business strategy of producing products that combine computer and acoustical technologies builds on the success of earlier products and also uses the partners' expertise in acoustics and IT to the fullest. Even though Young Digital Poland continues to focus primarily on the Polish market, it also went international by obtaining permission to use the Internet for downloading cartoon material designed and owned by the Walt Disney company:

"...Four years ago we [realized] it would be a good idea to produce sound blaster software for the Polish market. This was followed by a contract with the Disney Company to use its cartoon characters in our speech therapeutic software which teaches the deaf to speak."

Based on this quote it is evident that early on, Young Digital Poland focused foremost on

marketing electronic products which measured and processed acoustical signals. Young Digital Poland deliberately chose the business strategy of combining IT with acoustical technology to create customer value and improve organizational effectiveness.

Our informant further reflected on the tremendous economic risks the company faced:

? ...We started without any money...All we had was enthusiasm and a [willingness] to work hard...We started [with] nothing...The second year we multiplied [our] annual sales by ten, the third year by five, the fourth year by two, and this year [the fifth] by three...We [now] reached annual sales of one million [\$ US].?

One of Young Digital Poland's most innovative and successful products is its CD-ROM-based English learning program. It is the brainchild of one of the four partners who combines excellent engineering skills with a good understanding of marketing principles. Sooner than his partners he perceived that the market for acoustical instruments is limited, highly competitive and dominated by Western European and North American companies. The marketing manager realized that informatization - combining information and communication technologies - will eventually impact most aspects in Eastern Europe. The extent of informatization in Eastern Europe is presently low, but companies are catching up and the market for information technology in Eastern European countries is booming. Frost and Sullivan (1995) estimate that the office automation market in Eastern Europe will triple by the turn of the century.

Young Digital Poland's marketing manager challenged his partners to consider a new software-based product which can take advantage of the nation's rapidly expanding hardware base. According to the marketing manager, buyers who demand quality hardware will also make software

quality an important issue. In short, the success of Young Digital Poland's new product turns on quality (Table 1, Column 3, Row 1).

The marketing manager stated that Young Digital Poland should seize the opportunity and produce a self-paced compact disc-based course which individuals can use to learn English in their own time without having to incur high tuition costs. The compact disc is a multi-media realization of a well-known and highly regarded textbook-based English course. The textbook is supplemented by audiotapes and teaches English syntax, grammar, and pronunciation.

The CD-ROM-based product includes English teaching items: multiple choice questions, filling in the blanks, matching words, working with text and dialogue recordings, typing words audibly dictated, completion of sentences in a dialogue, marking the required elements in a piece of text, completion of missing descriptions of a picture, explaining grammar constructions, grouping the most important phrases of a lesson, and a list of new vocabulary from each lesson. Furthermore, the software also contains video clips which present actual conversation scenes.

The marketing manager stated:

"We [initially] expected that Germany or France [would] be large markets but [we] finally decided that Poland would be the best market [for the language software]. First, we produce our product in Poland and we know that market well. Second, [in the past] Polish students did not learn English in school. Because it can increase an individual's earning power fivefold the motivation for Poles to learn English is very high. We now sell up to twenty-five hundred [software] copies each month."

The marketing manager indicates a further reason for using the compact disc-based technology - it is not easy to copy. Pirating is a serious concern because in Eastern European countries 85% of software sold is illegally copied software (Cook, 1993). However, equipment to produce compact discs is expensive, so ordinary individuals will find it prohibitively expensive to pirate the software on a small scale. Pirating on a large scale would mean having to sell the software

in computer and software retail stores, which Young Digital Poland could easily detect and then prosecute.

Young Digital Poland's partners and employees have access to a company-wide LAN. This network is used for communication among the four partners, among the employees and, in particular, among marketing and sales personnel. However, to retain a personal touch, sales figures and marketing information, although prepared using IT, are manually transferred to graphs which show weekly sales figures in each Polish city and which are then used to motivate the company's sales force. A company partner explained his belief that hand-prepared promotional materials are more effective motivators than slick computer-generated materials.

Young Digital Poland uses IT extensively, both in its management processes and to develop, produce and market the company's products. The company relies on a mix of products for its survival. The acoustical equipment is produced to accepted international standards and, hence, these products are not very innovative. The CD-ROM-based English learning product is quite innovative. However, this product is based on an already successful and well-established paper-based version. This fact testifies to the soundness of the English learning method underlying the CD-ROM-based package. Hence, the risk of producing and marketing the CD-ROM-based package is considerably reduced. On balance, Young Digital Poland has introduced an interesting mix of standard and innovative processes, products, and customer services. These activities reflect a medium frequency of entrepreneurship and a medium degree of entrepreneurship. Hence, Young Digital Poland is a dynamic organization and, consequently, it is located in the central cell of Table 2.

3.3 Doradca

In the mid-1980's several entrepreneurial individuals, professors and graduates of the

University of Gdansk discussed the formation of a consulting bureau to help state-owned enterprises get around the many stifling regulations (Table 1, Column 4). These discussions resulted in the conceptualization and founding of Doradca. According to one partner the consulting bureau's mission was extraordinarily innovative:

"Our company is ten years old - not very old by Western standards. But in 1985 Poland it was extraordinary to establish Doradca under the Communist regime and martial law. The initiators were mainly economists and lawyers from local banks and Gdansk University. The beginning was difficult because there was hardly a market [for our services]. [However,] there were some state-owned companies that wanted to steer a more independent course and these companies were our early clients. So we made some money off the Communist bureaucracy."

To make the organization more innocuous to the Communist authorities, Doradca was essentially a cooperative. The business risks were enormous because as a senior consultant noted, there was little demand for consulting services. The exposure to risk was limited because Doradca was formed with little starting capital and only two employees: a consultant and a secretary. Doradca has been remarkably successful and today employs forty-two individuals, most of whom are consultants.

Our informant stressed the innovative nature of Doradca's services and stated:

"The [Communist] thinking concerning investments was completely different [from that practiced in the West]. The profitability of investments was assessed in completely different ways. [These] assessment procedures were created some thirty years ago and did not take into account the present value of money. The change to assess investments using present value occurred quite suddenly. Many people were unable to think in terms of this new concept. Even university teachers did not teach the new concept because they were unfamiliar with it."

The above quote further exemplifies the enormous conceptual differences that existed between Eastern European and Western industrialized countries concerning economic thinking. Doradca has introduced many new and innovative customer services: 1) financial consulting, 2) strategic marketing services, 3) quality management, 4) privatization and restructuring, and 5) management consulting.

Financial consulting, the backbone of Doradca, ranges from comprehensive financial analyses to reorganization of large state-owned companies. It involves analysis of organizational systems, business and privatization planning, and feasibility studies. Strategic marketing services comprise observational studies and survey and experimental research. Quality management includes the implementation of ISO 9000. The need to create a market sector is of primary importance to the restructuring of Central and Eastern European Countries and Russia. Management consulting focuses on strategies under turbulent market conditions. It involves confidential advisory services, strategic support for foreign and domestic investors, training programs, and organizational analysis of management systems.

Since its founding Doradca has had a matrix organizational form. Because Doradca needed to keep overhead low, its consulting projects are assigned on a case-by-case basis. Our informant stated:

? There is a project manager [for each project]. He or she lets our consultants bid for the entire project or parts thereof. The project manager negotiates price and completion target dates. Every consultant reports time spent on each of his project assignments. So we have [project] control...there are records for each project detailing expenses and contractual obligations.?

The situation described above led to Doradca's success. The unique organizational structure

enabled an optimal match of product strategy, human resources, corporate values, and the way consultants were paid. When it became possible Doradca was quick to enter into cooperative associations with several international consulting companies and to expand operations into other Eastern European Countries and the Commonwealth of Independent States.

Doradca has moved rapidly toward informatizing its organizational processes. Our informant noted:

? ...Have a LAN and we are presently installing Windows NT...In this [consulting] business IT is indispensable. We are several years behind the West but the gap is closing fast. Presently [1995] most of our PCs are 486 machines...Use the Internet to access databases and to communicate with partners and customers. We often work in consortiums with companies world-wide [with whom] we exchange files and information via the Internet. We [also] use the Internet for [identifying] investors and clients that need to privatize.?

Table 1 (Column 4, Row 8) shows that IT features strongly in the creation of customer value and managing the firm. Partners use the LAN to competitively bid on an entire project or parts of it. This bidding procedure saves time and it ensures that customer projects are completed in a cost effective manner because they are assigned to the lowest bidder. Successful project completion is very computation-intensive and, hence, IT-dependent. Doradca introduced a great number of new processes, products, and customer services. These innovative actions were often very risky. Since both the frequency of and the degree of entrepreneurship are high, Doradca is defined as a revolutionary company and is located in the upper right-hand cell of Table 2.

4. Entrepreneurial Intensity and IT in Three Polish Cases

The three companies described above use IT in quite different ways. Kancelaria Notarialna

uses IT merely for word processing and communication between the two offices. In the case of Young Digital Poland IT forms an integral part of the product and customer services. Furthermore, IT is used extensively for management purposes, for internal and external communication, and to speed up product development and production processes. Of the three companies discussed, Doradca uses IT most extensively. For example, a request for consulting services receives an initial workup which then is presented to all partners on the company's local area network. Partners enter bids on parts or on the entire project. The project is then assigned to the company partners with the best bid in terms of cost and time. Doradca operates several offices outside of Poland and works on assignments originating in Poland, Russia, Belarus, and Ukraine. Much of the information concerning these assignments is shared on the Internet.

The three case studies show that the strategic use of IT is positively associated with entrepreneurial intensity. Previous studies support these findings. For example, Howard and Higgins (1990) argue that champions of technological innovations share several personal and behavioral characteristics as well as common career experiences. Among these are self confidence, persistence, risk-proness, ability to express and pursue a vision and develop the potential of others, and the ability to make and pursue plans. The aforementioned characteristics show a significant overlap with the personal characteristics shared by successful entrepreneurship. Thus, Miner (1997) states that entrepreneurs have a high achievement need, desire to plan, have a belief that social processes matter, decisiveness, a desire to compete, and an ability to make decisions under uncertainty. Similarly, Cunningham and Lischeron (1991) list the following entrepreneurial characteristics: intuition, vigor, persistence, self esteem, risk taking, the need for achievement, creativity, planning, motivating others, and an alertness to opportunities. Furthermore, Raymond (1992) maintains that the business

organizations which show an increased propensity of growth use IT more intensively. Finally, McWilliams (1995) shows that despite the restricted funding of their IT departments, small companies rely for success more heavily on IT than their larger counterparts.

Associating company success with entrepreneurial intensity is somewhat difficult because precise measures of success are estimates rather than hard figures. Success measures include: company longevity, rate of new product development, market uptake of new products, expansion and creation of new markets, and increased employment (Table 3). However, Table 1, 2, and 3, and the text above give a reasonable assessment of the success of our three companies, which ranges from medium for Kancelaria Notarialna, through high for Young Digital Poland, to very high for Doradca. Table 3 also reveals a close association between the importance of IT, entrepreneurial intensity, and company success.

Summarizing, all three companies make use of IT. Our informants indicated that the lack of capital coupled with an inadequate telecommunication infrastructure interfered with making full use of IT and expanding it at a more vigorous rate (Kapoor, et al., September 1996). The informants at these companies expressed a need for better trained managers who know Western business practices and can use IT for competitive advantage

5. Conclusion

The entrepreneurs in the three Polish companies in this study are individuals who would do well under most conditions. They are resourceful, not easily stifled, and adept at solving the business problems that occur in Poland. The business partners in these three companies clearly like what they are doing - the job itself gives them a great deal of satisfaction. Reviewing the audio taped interview material we were struck by the fact that none of the partners ever mentions being in business for

financial gain. This is not to suggest that money is not important to these entrepreneurs, but it is not the most important aspect of the business.

The entrepreneurs understand and, indeed, embrace enthusiastically the new business opportunities that arose from the political changes in Eastern Europe. It is our view that political, social, and economical change occur not only in Eastern Europe but also in many other countries. This gives rise to a unique set of business opportunities. Transforming opportunities into business success requires insightful, flexible, and decisive corporate managers. The individuals we interviewed certainly rise to the occasion.

The companies which we investigated were generally reticent about disclosing annual turnover and profit figures. Thus a limitation of this study is that it cannot link company financial performance to entrepreneurial intensity or IT use. However, if the combination of new product and services uptake and longevity are seen as indicative of company success, then our study reveals a positive association between entrepreneurial intensity and the use of IT. In fact, the strategic use of IT and entrepreneurial intensity arise from the same set of factors.

Gawlikowska-Hueckel and Zielenski-Glebocka (1992) argue that Poland was the first country in the world which confronted the problems arising from economic transformation and the restoration of a market economy with a forty-year command economy as a starting point. Nuti (1991) claims that Poland's experiences with economic transformation are indicative of all the transitional economies of Eastern and Central European countries and the former Soviet Union. Even though not all countries in transformation are trying to overcome communist-style command economies they share with Poland a need for an adequate response to rapid economic and political change. Thus the lessons learned in Poland have wide applications and hence, this article with its emphasis on

entrepreneurial action supported by IT, should be of interest to academics as well as business practitioners.

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Table 1 Entrepreneurial Aspects

Entrepreneurial Aspects	Doradca	Kancelaria Notarialna	Young Digital Poland
<i>1. Entrepreneurial Individuals</i>	<p>Total Number: 15 Specialities: economics, finance, law, management, privatization Characteristics: innovative, competitive, quality and cost conscious</p>	<p>Total Number: 1 Specialty: law Characteristics: quality and service conscious</p>	<p>Total Number: 4 Specialities: sound, electronics and computer software Characteristics: innovative, quality, cost and service conscious</p>
<i>2. Innovativeness</i>	<p>Exceedingly creative and novel solutions to problems and opportunities caused by the modernization of Poland, Eastern European countries, and the former Soviet States</p>	<p>Fairly routine solutions to legal problems and opportunities caused by the modernization of Poland</p>	<p>Exceedingly creative and novel solutions to needs and new markets arising from the modernization of Poland</p>
<i>3. Risk Taking</i>	<p>Moderate to high risk exposure concerning product development and production, and political situations Additional risk exposure arising from offices in several East European nations and States of the former Soviet Union</p>	<p>Minimal risk exposure</p>	<p>High risk exposure during product development, production, distribution, and marketing Diminishing risk by weekly sales tracking</p>
<i>4. Introduction of New Goods and Services</i>	<p>Consult state agencies on cutting through governmental red tape Consult state-owned companies on privatization</p>	<p>Provide legal services to individuals, companies, and other organizations Recent economic transformations have caused an increased need for legal services</p>	<p>Innovative multi-media software packages for the educational markets, CD-ROM, DVD-ROM Specialized acoustical instrumentation, sound blaster software</p>

Table 2 Entrepreneurial Aspects

Entrepreneurial Aspects	Doradca	Kancelaria Notarialna	Young Digital Poland
<i>5. Methods of Production and/or Service</i>	<ul style="list-style-type: none"> · Office automation to help document creation · Company-wide local area network to aid competitive bidding for consulting assignments and creation, development, marketing of consulting services, workflow, and analyzing legal acts 	<ul style="list-style-type: none"> · Office automation to speed legal document creation, analyze legal cases, developing legal solutions, and arranging property transfers 	<ul style="list-style-type: none"> · Office automation to speed document creation · Company-wide local area network for office automation, product innovation, development, production, marketing and sales · CASE tools for software creation
<i>6. Market Creation</i>	<ul style="list-style-type: none"> · Polish privatization market · East European, Russia, and States of the former Soviet Union privatization · Opened offices in Poland, Volgorod, and France · Establishing cooperative arrangements with several consulting European bureaus 	<ul style="list-style-type: none"> · Penetration of the emerging Polish market for private and corporate legal advice 	<ul style="list-style-type: none"> · Penetration of the existing Polish and international acoustical equipment market · Exploiting the emerging multi-media educational software market
<i>7. Organizational Form</i>	<ul style="list-style-type: none"> · Consultants are independent agents and competitively bid for parts or entire projects. This organizational form ensures that projects are completed by the right individuals at lowest cost. 	<ul style="list-style-type: none"> · Traditional organization 	<ul style="list-style-type: none"> · Traditional organization comprising market research, software engineering, production and customer service
<i>8. Importance of IT</i>	<ul style="list-style-type: none"> · Lowers cost and improves quality, increases service differentiation · Enables intra and inter office communication · Internet use to access databases, acquire data, work in virtual companies, and exchange files 	<ul style="list-style-type: none"> · Lowers production costs and improves quality 	<ul style="list-style-type: none"> · Enables creation of multi-media software · Enables office communication · Enables software production, marketing and customer service · Drives company growth

Table 3 Entrepreneurial Intensity

Frequency of Entrepreneurship	Degree of Entrepreneurship		
	<i>Low</i>	<i>Medium</i>	<i>High</i>
<i>High</i>	Entrepreneurial Nature: Continuous-Incremental		Entrepreneurial Nature: Revolutionary Company Name: Doradca
<i>Medium</i>	Entrepreneurial Nature: Dynamic Company Name: Young Digital Poland		
<i>Low</i>	Entrepreneurial Nature: Periodic/Incremental Company Name: Kancelaria Notarialna		Entrepreneurial Nature: Periodic-Discontinuous

Table 4 Entrepreneurial Success

	Doradca	Kancelaria Notarialna	Young Digital Poland
<i>Company Age</i>	Founded in 1985	Privatized in 1990	Founded in 1989
<i>New Product Development Rate</i>	Consulting services include: privatization, financial, marketing, and valuation High	Privatization of legal services Low	Acoustical instruments Multi-media educational software and hardware Medium
<i>New Product Uptake</i>	Excellent	Satisfactory	Very satisfactory
<i>Expansion and New Market Creation</i>	Very aggressive	Moderate	Aggressive
<i>Employment Increase</i>	Two in 1985 Forty in 1995	Three in 1991 Eight in 1995	Four in 1989 Eighteen in 1995
<i>Annual Sales</i>	Unknown	Unknown	\$1,000,000
<i>Annual Profits</i>	Unknown	Unknown	Unknown
<i>Entrepreneurial Intensity</i>	High	Low	Medium
<i>Importance of IT</i>	Supports organizational, product development, and production processes	Supports organizational and production processes	Supports organizational and production processes
<i>Success</i>	Very High	Medium	High