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**Organizational Responses To Globalization In Some
Developing Countries: Interviews With CIOs In Hungary,
Romania, And South Africa**

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Abstract

CIOs in Hungary, Romania, and South Africa (SA) are today overcoming disadvantages that their firms suffered during decades of closed national markets. This paper reports on a series of interviews conducted with CIOs in these developing countries focusing on national and organizational strategies used to prepare for international competition and globalization. They achieved competitiveness by investing in information technologies (IT) that deliver strategic information to their stakeholders. CIOs expressed their views on national economic and market policies as those policies affected their organizations, their markets, and the local economy. Many CIOs remain confident in the general benefits of globalization though some hope for government protection, they nurture local expertise and bestow upon it the best IT they can offer, use IT as a value added component and where their firms use imported technologies they improve on them. Hungarian and Romanian CIOs perceived their organizations were investing more significantly in Internet technologies than South African CIOs, however, that may be a sampling aberration or a cultural bias.

1 Introduction

Globalization is a powerful force shaping economies, redefining national cultures, influencing flows of capital and labor, and changing traditional ways of doing business. Globalization is driven by communications and information technology. Opening national markets to globalization is often national policy as is the building and financing of the infrastructures needed to support it. However, once national markets have been opened to international competition these markets “gain greater access to more capital, technology, cheaper imports and larger export markets” (African Development Bank, 2003, p. 160), as well as to strategic market information.

Globalization has been associated with negative developments as well, e.g. environmental degradation, exporting of jobs, minimizing self-determination, diminishing authority of the state, and further abandonment of the poor. Clearly, the ability to successfully compete in an open market depends on a firm’s ability to muster human, financial, informational and material resources as well as have the basic support of its own national laws. In this paper the authors will examine organizational views of and responses to the forces of globalization as expressed by the CIOs of three developing countries: Hungary, Romania, and South Africa. The article will concentrate on these CIO’s fears, visions, and actions to bolster their organization’s information resources to face the threats and opportunities posed by globalization to their businesses.

2 Research Backgrounds

2.1 Country Backgrounds

All three countries have suffered under oppressive regimes for nearly five decades and received their freedoms within the past fifteen years. Hungary experienced slow, deliberate changes since about 1965 from a centrally planned economy toward liberalization of business processes through cautious economic reforms. Hungary is slated to join the European Union in 2004. Romania experienced a brutal communist dictatorship until 1989, when a violent revolution resulted in repeated attempts at the establishment of democratic institutions. More recently Romania has been aspiring to become a member of the EU as well. From the late 40’s until 1994 South Africa has shown how effectively a distorted but legalized distribution of power can bring about a warped social system, when backed by strong-willed security forces. Since the banishment of apartheid South Africa too has embarked toward a democratic government and toward economic integration with the rest of the world.

While recent history allows us to draw parallels between the three countries many social, political and economic differences distinguish them. South Africa is a diverse multi-racial multi-cultural country with a sad background of slavery and minority subjugation. Romania is a patchwork of smaller countries acquired through agreements and international edicts. Nevertheless Romania’s population is mostly white of Latin origins with a small minority of gypsies. Hungary today is the remnant of an empire populated by a mostly monolithic group of the Magyars alternatively deemed either of oriental descent or white. These social differences are observable in the contrasts of the cultures. Prior to 1994 democracy has been the privilege of the South African elite, Hungary tentatively embraced it at the turn of the last century, while Romania always struggled with it, hopefully finally getting it right by the late 90’s.

Political and social history is reflected in these countries' economic performance. Figure 1 below depicts GDP per capita over nearly two decades for all three countries. This reinforces the observation that Hungary's economy was on the upswing even towards the end of communist rule in 1989 (often attributed to "goulash communism"), while South Africa was suffering the ravages of social upheavals well into the end of the 20th century. Though, shortly after the fall of apartheid South Africa's markets began opening up. Romania, due to a lack of democratic history had difficulties embracing free market capitalism even after liberation in 1989. Not until about 2000 did Romania begin instituting open market policies as reflected in Figure 1 below.

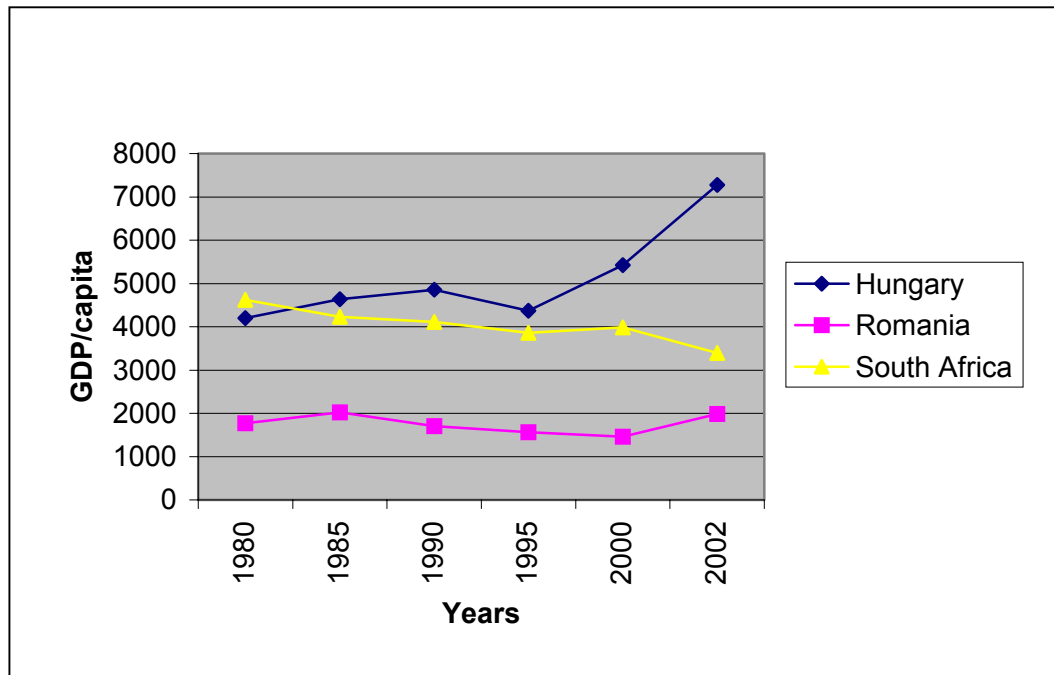


Figure 1: History Of GDP/Capita Of The Three Countries

Data: World Bank, 2004; CIA World Fact Book, 2004

GDP/capita in the US over the same period grew from \$21,001 to \$36,123 at a steady 3.27% annual average rate.

2.2 Data Collection

The interviews targeted CIO's from seven industry groups; these are national and local government, telecommunications and computer services, manufacturing, education, retailing, shipping and transportation, and financial and insurance services. Table 1 below depicts the CIO interview structure for the countries. Some of the larger firms operate in overlapping industries and were considered as such. Sizes of firms ranged from 12 employees to several thousand. Smaller firms in the ICT industry have not separated the CIO and CEO functions and a single individual, usually the founder, was serving in both roles.

Of the 32 questions the first five covered demographic data. The rest were both closed and open ended. Open ended questions addressed the effect of globalization and the opening of national markets to international competition and the preparedness of national industries to compete as well as expected benefits, if any, to consumers. The six closed ended short questions analyzed in this report were used to provide statistical support to the open-ended questions by addressing national as well as organizational preparedness with information and Internet infrastructures to effectively compete in an international market place.

Table 1: Interview Structure Of CIOs By Country And Industry Group

Industries	Hungary	South Africa	Romania
National & local government	2	1	1
Telecomm, computer services	1	1	4
Manufacturing	1	1	2
Education	1	1	1
Retailing	1	1	1
Shipping/ Transportation	1	1	1
Financial & insurance services	4	1	1
Number of CIOs interviewed by country	11	7	11

Data: World Bank, 2003, 2004; CIA World Fact Book, 2002, 2004

3 Results

The following questions and responses address CIOs' position in the three countries on opening national markets to competition. For completeness we will also later include additional observations made by the interviewees to these closed ended questions.

3.1 CIOs Impressions On The Impact Of Open Markets On The Economy

Will opening of national markets to international competition be beneficial or detrimental to consumers?

Hungarian CIOs almost unanimously agreed that Hungarian consumers would benefit while Romanian and South African CIOs thought that, in general, consumers would benefit with the availability of better and cheaper products.

Will opening of national markets to international competition be beneficial or detrimental to national industries?

Hungarian CIOs believed that national industry would benefit though one CIO in the electronics industry disagreed. Romanian CIOs, with three exceptions, were rather positive on opening of national markets; the three exceptions were manufacturing, software, and education. Four of seven South African CIOs viewed opening of national markets to international competition as detrimental to their industries. South African industries taking a negative position were shipping, retailing, manufacturing, and government.

Will opening of national markets to international competition be beneficial or detrimental to national culture?

Seven of ten Hungarian CIOs judged the opening of national markets as being beneficial to national culture; those responding negatively were CIOs from national government, local government, and financial services. Of the Romanian CIOs six of ten believed that national culture would not be adversely affected by opening of national markets. Those disagreeing are CIOs from the software, communications and the light manufacturing industries. Four of seven South African CIOs believed that there would not be detrimental effects on national culture; those disagreeing are CIOs from education, telecommunications, and government. Those who consider opening markets to international competition a threat to national culture in SA fear that “national culture can be lost with outside pressure, however; international effects can also help national culture.” The issue of the loss of “South African identity” is of particular concern to South Africans considering their long yet colorful history.

3.2 CIOs General Impressions Of The Impact Of Globalization

Next CIOs were asked about their opinions regarding “opening national markets to international competition” and specifically on consumers, their own as well as national industry, and national culture. These were open-ended questions.

The Hungarian language is spoken by only ten million people and is unlike other Western European languages. In order to ensure full integration into the European Union and into the international economic system Hungarians need to learn Western European languages. For 43 years the only required foreign language in Hungarian schools was Russian, hardly an international language today. Some CIOs pointed out that opening national markets would assist education by encouraging foreign language learning which would contribute to Hungarian industries benefiting from international information flows.

Hungary’s private industries are newly formed; most did not exist 15 years ago and are still relying on some level of protection from international competition. As one CIO expressed it “there will be many domestic firms who will not be able to confront the competition”. Other fears expressed involved national culture, which is highly cherished by a nation whose history dates back some twelve centuries. Though these concerns are not broadly held one CIO suggested that “[as information becomes globalized] national culture would be adversely affected” while another observed that “national culture will be affected by mixing of cultures and may even result in exchanges and eliminations of some aspects of culture”.

To some extent Romanian managerial practices follow a more structured and hierarchical approach left over by forty-three years of an autocratic government. As one CIO noted, “Romanian managerial thinking must be westernized” before domestic industries can begin to be competitive. This would be an urgent change since by 2007 Romania’s economy will have to operate in international markets in the EU.

As in Hungary, Romanian private industry is young and without the track record of western businesses. As a result there is a perceptible concern on the part of CIOs that small firms, especially in the IT industry “may be bought up and will disappear”. Others noted, “Romania must catch up with the west on technological grounds”. Such eventuality is viewed as an issue of national pride. In reference to Romania’s poor record on corruption (Transparency International, 2003a, 2003b) one CIO observed, “[Romanian] culture will suffer because morality will suffer since Romanian society [already] has poor morals.” Decay of morality in Romania was attributed to the influx of

Western culture, movies, books, and games, during a time when Romanians were attempting to find the meaning of honesty and morality in business. Those concerned about national culture observed that dependence on foreign countries for products, information and entertainment “would doom [their] society and culture”.

Some Romanian CIOs considered electronic commerce as a viable alternative to inexperience and under-capitalization, “effective use of the Internet would be key to domestic success” remarked a CIO.

In a perfect world efficient markets guarantee the best products at lowest prices through competition. However, to ensure the competitiveness of domestic industries many governments will protect national industries until they can stand on their own against the financial power of international firms. Hungarian and Romanian interviewees were looking for such domestic protection. South African CIOs feel similarly, suggesting that “SA needs a bit more time to grow domestic industries and get them on a competitive footing, then will benefit from open national markets”. Some South African CIOs felt that in order for open markets to benefit consumers, and industries “the efficiency of markets [must be] assured”; only then can “customers be assured of quality products”. On the other hand these CIOs noted that “the competitiveness of foreign firms would initially be detrimental to national industries” because over time, and as a result of South Africa’s isolation for a period of time, “larger firms built inefficiencies into the system” and are now less capable of competing in an open market. Such inefficiencies may be part of the past, however, as one CIO cited the example of South Africa’s textile industry, which shrunk upon opening up to international competition but it “survived and is now coming back”. Another interviewee observed that South African firms “need to improve industrial efficiencies to focus on what they can do best” and allow more efficient producers to capture what they know how to produce better.

On the topic of globalization one CIO pointed out, “Hungary was a non-willing candidate for the European Union. The process of accession was somewhat forced to begin with”. As the principle of globalization took hold the country moved rapidly to open up its markets; in fact, as several CIOs remarked, “[today] Hungary is fundamentally an open economy”, and “[further] opening markets will only increase opportunities” and “[provide] advantages” to firms which are prepared for competition. Opening up to globalization will favor technologically developed firms. To many CIOs “it is not at all certain that Hungarian products can hold their own in international competition”. “The integrity and protection of national markets will be diminished and the weaker, unprotected firms will suffer, given the availability of information and technologies or not” remarked a CIO, while another pointed out that “the aggressiveness of large foreign firms is manifest in several markets already as they pressure and drive out local firms”. Therefore, these decision makers were not willing to be totally on their own without government help; several CIOs acknowledged that, “[while] it will be the government’s task to remove some of the limiting regulations” at the same time they expected the government to “invoke protection for certain branches of the economy in need of protection, such as certain nationally produced products”. Otherwise they fear that history might repeat itself and the country “may become the subject of a modern form of colonization”, that is economic colonization.

Hungarian CIOs expect globalization to take hold in measured steps. Though there were small private businesses, up to 5 employees, operating prior to 1989, most other businesses were government owned. After liberation most were privatized and remained large. Missing from the structure of Hungarian economy are the midsized firms seen by some CIOs as being “crucial at providing a calming influence in a wildly changing economy, e.g. reducing swings in employment, which an open market will result in”. These CIOs suggest that, “further opening will be risky to weaker mid-sized firms in the economy” unless of course, partnerships could be made beneficial to Hungarian firms.

“Unfortunately Hungary is short on capital and must rely on foreign sources and on willing multinationals” added one CIO. Standardization within the European ISO framework was seen as another area where Hungarian firms need a lot of help. As a CIO in the manufacturing industry observed, “requirements ... include provisions for improved electronic communications, information systems, improvements in product quality: regulations, procedures, standardization, and implementation of production technologies”, in other words with most aspects of modern manufacturing.

“Opening markets to global competition would be a step forward for Romania” was the general opinion of local CIOs. Most were confident that national markets could withstand international competition though some are concerned about the future prospects of smaller firms. One CIO remarked, “Many firms will be absorbed by global organizations,” even destroyed, though, says another “globalization will be worth the pain”. On the other hand, as one CIO put it,

“... Competition would filter out poor quality and practices. Quality of local products as well as imports would improve with international competition in Romania’s markets. Acceptance of international standards would lead to improved domestic production and marketing practices. Already Asia and Africa are competitors of Romanian industries. Many western products and practices have already been imported: some good, some bad. Globalization would reduce many of the losses presently incurred due to poor transportation routes and time lost at international borders. Furthermore, corruption related to customs payouts will also be reduced”.

Globalization involves not only world markets but the sharing of efficient resources as well. Therefore, commented one CIO “... [Globalization] will allow Romania to showcase its advantages to the world” at the same time “gain access to efficient foreign resources”.

One serious roadblock to fair competition may be a market of mixed enterprises: private and government. Before Romanian economy can stand on its own “total privatization must be achieved since there are for instance, government owned banks in the market at present (e.g. ExIm Bank) competing side by side with smaller private financial institutions” remarked a CIO at a private bank. Also, “larger enterprises have foreign shareholders which may shield them against foreign competition”. Furthermore, says one CIO, “foreign assets will also be protected from foreign competition” though assets of domestic enterprises are not.

Several Romanian CIOs observed that, “globalization will improve education” and through the use of “increased efficiencies [from] technology” and from education the nation may be able to save its threatened industries. “Broader education base will expand knowledge,” said one CIO and “globalization will help with faculty and student exchanges thereby broadening the knowledge base and offering dual diplomas.” The downside of globalization is that educated resources will gravitate to where the money is and the “loss of Romania’s educated work force and their expertise to foreign competitors” may seriously slow and even hurt national development.

Relative to some of the giants in the global market Romania’s economy is small, its experience with free market economics is brief, and its capitalization is dwarfed by the likes of most Western countries. CIOs acknowledged, “In order for Romania to grow economically [they] must expand economic and business contacts with other countries. They need to utilize Western economic power to Romania’s advantage”. Many Romanian CIOs suggested that “future partnerships will evolve through collaboration” and they are

planning to be willing partners; as one CIO observed the “power of the dollar (or the Euro) is enormous” they cannot even begin to compete without outside support.

Many Romanian CIOs are attempting to achieve strategic benefits by building and exploiting information systems in order to keep ahead of international markets. As one of them noted, he is trying to “keep [his firm’s] competitive edge in the future through close control with the help of IS”. According to another CIO “many ... Romanian firms without proper IS are in trouble and will not be competitive and consequently will lose their markets.” For over forty years Romanian businesses muddled under the command economy of the political system without the benefit of business information. However “over the past twelve years IT grew considerably in the region though retail sales of equipment have dropped recently with a slight up-tick over the past year” pointed out another CIO.

With the growing sophistication of consumers Romanian CIOs are anxious to capture their business by “opening ... an information network for consumers” said the CIO of a local financial institution.

Romania is divided into three uniquely different regions one of which is Transylvania, a fertile yet mountainous region of mixed cultures often isolated from the rest of the country for long periods of time and frequently the political pawn of hostile neighbors. A small number of Romanian CIOs displayed an interesting smugness in Transylvania formulated by one of them as, “It is difficult to imagine large international firms in Transylvania. There is no room for the large projects such as those in Bucharest and its surroundings. Also, the large banks in Bucharest are at such a long distance from Transylvania and have limited influence on investments [here]. There are [only a] few major firms in the region. Therefore, there is little to be concerned about regarding international competition in Transylvania”.

International sanctions were lifted on South Africa in 1994, relatively recently compared to Central and Eastern Europe’s opening to the international competition beginning in 1989. Relative isolation of SA’s economy resulted in “a short term level of threat from globalization but if ... [businesses] can improve efficiencies, then the long term threat to their survival ... can be managed,” was the opinion of a telecommunications CIO. As a result “SA is open to competition in a government regulated market” observed another, allowing some industries to confront “threats ... coming from new domestic entrants and from consolidations within the existing market usually driven by legislative changes” rather than by foreign competition said a CIO of a manufacturing firm. “In order to nurture national industries protective laws with sunset clauses are needed,” added one CIO. Indirectly, government regulation keeps out foreign entrants in some of the industries by regulating size and numbers of outlets allowed, artificially creating diseconomies of scale, noted the same CIO.

A CIO at one of the country’s universities observed that globalization would even have an effect on university education and research. He noted, “This institution will experience competition from North America, SE Asia, and Australia.”

Continued protection of the economy may prolong “inefficiencies without development of the country’s large resource base.” As one CIO suggested, “foreign experience will benefit the domestic economy” by improving its competitiveness much faster than government protections can achieve. In general South African CIOs did not consider globalization as a detrimental movement in their industries.

Local governments by definition are serving a particular region and globalization as such does not prove to be a threat to them. They do, however, have some international arrangements such as business links with international entities, more specifically in the medical field. They also expect to have more business links with other parts of the

African continent, maybe in an advisory role through NEPAD (The New Partnership for Africa's Development), and via their national government. They are planning to use globalization to their advantage by establishing and maintaining contacts and utilizing the information resources of other countries' governments.

In order to gear up for the up-coming competition many CIOs are at present acquiring access to market information from international sources for their executive officers.

South Africa's large retailers do "... not expect foreign retailers could pose a serious threat to them. In fact they feel they can keep overseas retailers out of their markets." Globalization will be used to their advantage and, one retailing CIO was so "confident in their retail model [that they plan] to export it during their expansion overseas and to expand it into some other product lines."

Of the three countries, today South Africa has the largest unemployment at 37%, while Hungary's unemployment is at 6.5% and Romania's 10.8% (World Bank, 2004). SA's CIOs acknowledged this large unemployment and the need to reduce it, however, they did not offer solutions to it under globalization.

Table 2: Organizational And National Responses To Globalization

		N	Mean	Std. Deviation	Median
Capital investment in IT at the organization	Hungary	10	2.50	0.707	3
	Romania	10	2.50	0.707	3
	South Africa	7	2.00	0.816	2
Capital investment in Internet technology at the organization	Hungary	10	2.30	0.949	3
	Romania	10	2.50	0.527	2.5
	South Africa	7	1.29	0.488	1
Capital investment in IT in the country	Hungary	10	1.20	0.422	1
	Romania	10	1.20	0.422	1
	South Africa	7	1.57	0.787	1
Capital investment in Internet technology in the country	Hungary	10	1.20	0.422	1
	Romania	10	1.20	0.632	1
	South Africa	7	1.29	0.488	1
Capital investment in IT as % of total budget at the organization	Hungary	10	3.40	1.578	3.5
	Romania	10	2.50	1.509	2
	South Africa	7	3.00	1.528	3
Annual operating budget of IT as % of total operating budget of organization	Hungary	10	1.60	0.843	1
	Romania	10	1.90	1.370	2
	South Africa	7	1.57	1.512	1

3.3 CIO And Country Responses To Globalization

In Table 2 responses for the first two questions ranged from 1 = less than the industry average in your country, to 3 = greater than the industry average in your country; for the third and fourth questions possible responses ranged from 1 = less than what it should be, to 3 = greater than what it needs to be. For question five breakpoints for the possible

answers were at 0, 1, 5, and 10 and over 20% of all annual capital investments, and for question six breakpoints for the possible answers were at 0, 10, 20, 30, and over 40% of all annual operating budgets.

4 Analysis Of Results

Of the three countries examined here Hungary appears to have a jump on South Africa and Romania in its efforts to open the economy to global competition. With a few exceptions CIOs interviewed in these three countries concurred that globalization will be beneficial to their consumers and industries, though they also diverged in some of their responses.

Results of globalization: Hungary started to open its markets to international competition as early as 1990. As a result unemployment peaked at around 11% in 1995; Romania, on the other hand, waited with economic liberalization until much later and was experiencing a spike in its unemployment in 2000 at around 12% but dropping since then to about 10.8%. During the same period the effects of globalization in Hungary were demonstrated by an increase in exports of goods and services from 50.6% to 60.6% and in Romania from 22.6% to 33.5%. Imports of goods and services demonstrated growths on the same order in these countries. In South Africa since 1994 there has been a net loss of jobs and unemployment stood at 37% by 2003 (CIA, 2003). During the period from 1998 to 2002 exports of goods and services in South Africa barely increased from 25.7% to 28.2% while imports of goods and services increased by just 2 percentage points (World Bank, 2003). Clearly, relatively larger increases in trade are demonstrated by Romania and Hungary where opening economies to international trade has taken place at rates faster than that in South Africa. This is also reflected in changes in GDP/capita as shown in Table 1. As compared to her immediate neighbors South Africa is still relatively closed (ADB, 2003, p.117-120) in spite of her many international trade agreements. High unemployment rates in South Africa are not likely the result of globalization since the process of globalization is moving slower in South Africa than in the other two countries, rather it is more likely the artifact of historical oppression, lack of education and infrastructures available to the poor.

Information: is a necessary ingredient in production; as reported by the ADB (2003) "ICT has enormous implications for international trade" because it is the vehicle for international business. In order to hedge their bets these three countries are preparing for globalization by building their information infrastructures (Pook and Pence, 2004, Pook and Szabo, 2004) and CIOs are preparing their organizations for international competition by developing their firms' information systems, and utilizing modern information technologies. Performing non-parametric analysis with a Mann-Whitney test on the questions in Table 2 we found that for the question of "*Capital investment in Internet technology at the organization*" there were statistically significant differences between Hungary and South Africa ($p < 0.05$) and between Romania and South Africa ($p < 0.05$). In other words both Hungarian and Romanian CIOs perceived that in their organizations they invested heavier in Internet technologies as compared to the national averages whereas South African CIOs estimated their organizations' investments in Internet based technologies to be somewhat less than the national average.¹ This difference is somewhat

¹ A word of caution must be interjected. In South Africa interviews were conducted in Cape Town. We may have chosen a sample in a geography that perceived they invested less than the average in their country, whereas the others thought they were above average – maybe it is the Cape Town vs. Johannesburg perceptions. This doesn't directly compare investment in the three countries, only

supported by World Bank (2004) findings that 14.8% of Hungary's population, 7% of South Africa's and 4.6% of Romania's population were using the Internet in 2001. There were no other statistically significant differences on the other questions in Table 2, suggesting that investments in IT as well as in countrywide Internet technologies and infrastructures is about the same among these three countries. Furthermore, capital investment in IT as a percent of organizational investment as well as operating budgets of the IT function demonstrated no significant country differences either. The tests also showed that combining respondents from all countries there were no significant differences between answers from public and private organizations, but that ICT organizations had a significantly higher operating budget for ICT.

Other responses to globalization: CIOs recognized that inefficiencies must be shed by national industries in order to become competitive. Privatization in Romania and Hungary began with labor reductions of non-producing political employees, followed by the introduction of modern technologies that further shed employee numbers. As the workforce is retrained on new technologies or retired, unemployment rates have dropped. The globalized economy requires an educated labor force. Retraining in South Africa is confounded by her high illiteracy rate of 14.7% as opposed to 0.7% and 1.9% in Hungary and Romania respectively. Nevertheless, of the three countries examined here South Africa IT training programs are ranked at 47th out of 82 countries, while Hungary's is ranked at 23rd and Romania's is 82nd, where Finland is 1st and the U.S.A. is 3rd (Dutta, et. al 2003). Using the measure of "connectedness" defined as % of Internet users in the population (ADB, 2003, p. 212) 15% of Hungary's population, 7.14% of South Africa's population and 4.4% of Romania's population are Internet users, where these figures are 42.3% and 50.7% respectively for Finland and the U.S. Relatively speaking Hungary, Romania and South Africa have a long way to go to catch up with the early starters (figures based on WB Development Indicators, 2004).

National culture: Hungary's experience of losing 69 of her 72 national cultural cooperatives over the past 15 years underscores the plight of national cultures in all three nations. The majority of CIOs in all three countries were concerned about the loss of national culture to foreign influences.

Public policy: must support domestic businesses in a globalized environment with trade friendly tax structure, export promotion, reduction of bureaucracy, and a functioning national information infrastructure (Forbes and Wield, 2002, p. 23). The "domestic political environment needs to support businesses in order for the economy and society to benefit," observed the CIO of a South African shipping firm. While some Romanian and Hungarian CIOs were looking for government protection while they solidify their competitive position they too were pointing out their need for broader national information infrastructures in order to improve their competitive position. Bell and Pavitt (1993, p. 192) observed that protection of infant export oriented industries compels them to become competitive and forces them to learn in international markets.

Education and language: University CIOs viewed the prospect of globalization as a challenge to expand and improve language education, an opportunity for external funding, a chance to expand faculty and student exchanges, and motivation to update and improve curriculum. In South Africa the need was expressed to respond by strengthening their research record (the university already has three Nobel Prize winners) and promote high quality. To finance improvement projects they are looking for financing from

perceptions, and maybe World Bank figures above say more. The Cape Town CIO's may be below the SA "average" of 7% and the Romanians above their average of 4.6% but this is perhaps also investment for business purposes vs. for home availability. Hungary seems to indicate an above average use in a country with the highest "average". This is a difficult comparison to make indeed.

philanthropic groups such as the Mellon foundation, which will support IT expansion, though, in SA a serious limiting factor is the cost of bandwidth. A Romanian university's CIO felt that appropriate response to globalization will improve education and that may be one way to make national industries competitive. It was felt that a broader education base spurred on by globalization would expand knowledge and, therefore, should be supported.

While one of South Africa's many languages is English, it is a learned language for Romanians and Hungarians. University CIOs in both Romania and Hungary were pointing out the need for learning this common language so that language cannot become an obstacle to globalization; after all communication is the basis for information interchange.

5 Conclusions

There is a definite awareness by CIOs and CEOs of the implications of globalization on the organizations interviewed here. In general, these managers see the consumer as the central power behind their success or failure; they believe that globalization will benefit consumers and domestic industries. Opinions were split whether the spread of technology with globalization will harm or benefit national cultures.

In order to survive opening their markets and specifically the economic power of large foreign competition most CIOs and CEOs interviewed were hoping to gain the support of their own governments in order to nurture their young industries and were strengthening their firms' IS/IT projects to confront competition with the latest information tools. However, to continually protect infant IT industries against outside competition would only allow them to produce outdated products with yesterday's technology (Forbes and Wield, 2002, p. 56) and forever remain as "infants". Such was the case of Brazil through most of the 80's.

In their effort to become competitive and remain so many, though not all, of the businesses interviewed in these countries were involved in value added production of goods and services. That is, they developed and utilized indigenous expertise, innovativeness, education, and management know-how to increase the value of goods and services. In most cases, though more often in Romania, these firms utilized imported technologies and improved on them. The end result of such value added is that much of it remains in the country and will be reusable later. Other ways of adding value is to throw cheaper labor in larger numbers at a given task. There were some firms in the sample participating in such approach in Romania. Incidentally, such was also the case of Mexico's maquiladoras project (Smith and Lindblad, 2003) where foreign firms took advantage of wages one tenth those at home, as well as of India's surge in the international software industry. As Forbes and Wield (2002) observed, the Indian software "industry is ... totally dependent on employing enough people" at a fraction of going wages at home. This latter approach will also increase revenues and wages, and will also add value, but when increases in employment match those in revenues value added will become marginal (Forbes and Wield, 2002). And the added value is exported with the goods.

Hungarian and Romanian CIOs were investing more significantly in Internet technologies than South Africans were; however, the study did not measure a baseline of Internet investment, nor is it clear if comparative opinions can be relied upon. In the end it is not access to information and technology, open markets, or extent of globalization that will make a difference to the social and economic conditions of these countries but rather how

managers in the various industries will employ information and technologies they gained access to as a result of globalization.

In the absence of larger samples one must be cautious at generalizing to an entire nation. Furthermore interviews, including closed ended questions, are subject to cultural influences as pointed out by Hofstede (1980) suggesting perhaps that responses to comparative questions by the CIOs may be under- or overstated by respondents according to national culture. At best we can confirm that our findings agree with those presented by others. However, more data collection and interviews are called for before we may conclusively claim that expenditures in any one of these nations on information technology in response to globalization are in line with national goals or if views of technological advancement are immune to national culture.

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