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The Dilemma Of Addressing SAP Skills Shortages In Developing Countries.

Paul Hawking
Institute of Logistics and Supply Chain Management Victoria University, Melbourne, Paul.Hawking@vu.edu.au

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Paul Hawking
Institute of Logistics and Supply Chain Management
Victoria University
Melbourne
Australia
Paul.Hawking@vu.edu.au

ABSTRACT

A worldwide shortage of SAP related skills threatens the viability of many Enterprise Systems implementations limits the adoption of Enterprise Systems in developing countries. SAP, the leading Enterprise Systems vendor, has established its University Alliance Program (UAP) to help address these skill shortages. The SAP UAP provides the opportunity for universities to access SAP solutions and associated curriculum, to facilitate teaching, at a reduced cost. This paper proposes that the real cost for universities, to access SAP solutions, varies from country to country presenting a possible barrier for developing countries. A number of alternative options are presented to lessen this barrier.

Keywords (Required)

Enterprise Systems Education, SAP University Alliance Program, University Competence Center

INTRODUCTION

Many universities have realized the importance of incorporating Enterprise Systems (aka Enterprise Resource Planning (ERP) systems) into their curriculum and have committed considerable time and resources in doing so (Seethamraju, 2007; Hawking, Shackleton & Ramp, 2001; Watson and Schneider, 1999). These systems provide a comprehensive resource to support the teaching of business and technical concepts in a variety of disciplines including information systems, computer science, management, account and supply chain management (Rosemann and Maurizio, 2005). The value these systems provide in an academic environment is well recognized, however for many universities it has been a struggle to develop related curriculum. To address this issue ERP vendors have developed a number of initiatives to facilitate curriculum development.

Enterprise System Market

The Enterprise System market continues to grow globally with AMR Research (2007) expecting investments in Enterprise Systems to reach $48billion by 2011. This is evidenced by the growth in India. SAP, the leading Enterprise System vendor announced in 2007 that it had taken the company nine years to reach 1,000 customers and only one year later had achieved 2,000 customers (SAP, 2007). Part of SAP's strategy is to focus on the growth in the emerging markets of Brazil, Russia, India, and China which they referred to as the BRIC countries (Sutton, 2010). Analysts predict that the software market will reach $65.3 billion by 2013 which would be an increase of 14.7% from 2007 (Research and Markets, 2009). The Enterprise Systems market in recent years has experienced a number of mergers and acquisitions resulting in the consolidation of Enterprise Systems vendors with two major vendors remaining, SAP and Oracle.

The primary reason companies implement an Enterprise System is to facilitate integration (Deloitte Consulting, 1999). This improved integration occurs in relation to business processes, standardized data and standardized user interfaces. Both SAP and Oracle realized the importance of providing functionality to facilitate the integration of their Enterprise System with other systems both internal and external to the company. The vendors adopted a Service Oriented Architecture (SOA) approach to enhance their product development and facilitate integration. In late 2008, these vendors acquired the major Business Intelligence vendors, Oracle acquired Hyperion and SAP acquired Business Objects. The remaining "stand alone" Business Intelligence vendor, Cognos, was acquired by IBM (Bitterer and Cearly, 2007).

Many companies have been using Enterprise Systems for more than a decade. Their initial focus for the Enterprise System was related to the automation and management of transactions associated with their core business processes. The focus has now moved beyond transaction management to more strategic outcomes. This has seen an increased uptake of solutions such as Customer Relationship Management (CRM), Supply Chain Management (SCM), Supplier Relationship Management (SRM) and Business Intelligence (BI) as extensions of existing Enterprise Systems (Harris and Davenport, 2006). The adoption of extended Enterprise System functionality has seen greater pressure on acquiring appropriate skilled resources. SAP estimated, before the global financial crisis, that there was between 30,000 to 40,000 SAP related skill shortages (McGee, 2008). The president of SAP in Asia Pacific Japan (APJ) indicated that a significant proportion (15,000) of these skill shortages exist in the Asian region (Heng, 2008). The skill shortage has been identified as a major risk to SAP (Wallgum, 2008). The skills shortage increases the cost of available resources and thus the cost of implementations and it also threatens the success of the implementation. This can also have a negative impact on the sales of these type of systems. SAP has introduced a number of strategies in an attempt to redress this shortfall and associated risks. One of these strategies is to reinvigorate their SAP University Alliance Program (UAP).

SAP University Alliance Program

The SAP UAP was established in the mid nineties and was designed to deal with the skill shortage while at the same time introducing SAP solutions to graduates. Universities were provided with SAP's ERP system (R/3). It was either provided free of charge or at a minimal cost depending on each country's management of the program. In addition some countries provided academic workshops while others provided free or discounted SAP training. Many universities struggled to develop curriculum and sustain the personnel to teach and administer the Enterprise System (Hawking et al, 2004). These impediments were further compounded with new releases of versions and extended functionality (BI, SCM etc.). In an attempt to address these difficulties, at the start of 2000, SAP in conjunction with a number of universities throughout the world established University Competency Centers (UCC's). These UCC's received several million dollars of computer hardware, software and support from SAP and their Hardware partners. The UCC's were designed as not-for-profit facilities to provide access to SAP solutions to universities within a country and to facilitate curriculum collaboration between these universities. The implementation, operation and success of UCC's varied significantly between country to country and even within the same country. The large number of UCC's became an issue for SAP in terms of the level support required due to different country operations and the increased hardware requirements for newer versions of SAP solutions.

In 2007 the UAP program was re-invigorated by SAP through the launch of a number of new initiatives. The number of UCC's were reduced to five to support different regions; Americas (California State University, Chico and University of Wisconsin-Milwaukee), Asia Pacific and Japan - APJ (Queensland University of Technology), Europe, Middle East and Africa - EMEA (University Magdeburg and Technische Universität München). In addition SAP have setup a number of Application Competence Centers (ACC's) (St.Petersburg State Polytechnical University, HES-SO // Valais and Technische Universität Wien). These ACC's provide language specific SAP solutions and support. SAP endeavored to standardized pricing and processes across the UCC's. The UCC's streamlined the technological architecture and support required to incorporate SAP solutions into the curriculum for UAP member universities. Any new universities that join the UAP are strongly encouraged by SAP to utilize the UCC's services.

Another component of the initiative was the development of standardized curriculum. The Global Curriculum Project was established to bring together SAP specialist academics from around the world to develop plug and play curriculum. This also involved the development of appropriate data sets to support this curriculum. Initially curriculum was developed to incorporate SAP solutions to support the teaching of Business Process Management, Accounting, Business Intelligence, Supply Chain Management and a range of SAP integration technologies (NetWeaver). To assist in the roll out of the curriculum SAP sponsored academic workshops throughout the world. These workshops took academics through a particular curriculum offering including workshop and lecture material. The UCC's provided access to these data sets as well as support for the workshops.

SAP developed an area of their SAP Community Network website for the UAP academics. This site incorporates a range of WEB 2.0 technologies including forums, blogs and wikis where academics can interact. It also acts as a repository for curriculum materials and other resources to support teaching and research.

These initiatives have seen a significant growth in the UAP since their introduction with more than 900 universities and 180,000 students involved (LoBue, 2009). However will these initiatives be enough to facilitate the adoption of SAP related curriculum in developing countries? At the moment the majority of the curriculum material are in English. The content of the UAP website is also in English. Recently UAP language specific forums have been established for Russian and Japanese universities. The ACC's which were developed to support language specific SAP solutions currently only support French, English, Russian and German. A more critical issue is the costs associated with accessing SAP solutions via the UCC's.

RESEARCH QUESTION

The UCC's are based in developed countries and the pricing of services reflects this. Each UCC provides standardized pricing for all universities which utilize their services no matter what country the university is located. What is the real cost of accessing SAP solutions for universities in different countries with varying economic situations?

RESEARCH METHOD

The research question this paper addresses is to establish a comparison of real costs for universities to access SAP solutions in the UAP. A suitable economic factor needed to be determined to enable a comparison of costs and living standards between different countries. Economists have developed a number of measures to compare the cost of goods and services between countries. One such measure is Gross Domestic Product (GDP) per Capita which determines the value of all final goods and services produced within a nation in a given year divided by the average population for the same year. Another measure, Purchasing Power Parity (PPP) takes into account the relative cost of living and the inflation rates of the compared countries (Wikipedia, 2010). Some researchers have argued that the combination of both GDP and PPP is an appropriate measure when comparing goods and services between countries (Hill, 1986; Thomas et al, 2001) The World Bank, and the International Monetary Fund (IMF) have developed ranked lists of countries as per GDP (PPP) per capita (Wikipedia, 2010). To investigate the research question it was considered that the IMF list was most appropriate as it was based on the most recent figures (2009).

A list of countries involved in the SAP UAP was sourced from the SAP Community Network website (SAP, 2010). This list was then cross referenced with the IMF GDP (PPP) per capita list. It was then subdivided based on the SAP UAP regions (EMEA, APJ and Americas). These new lists were adjusted making the country (United States, Australia, and Germany) from where the UCC was located as the baseline factor. Therefore the GDP (PPP) of each country was a factor of the country providing the service.

The cost of accessing SAP solutions via a UCC was then incorporated into the lists in US currency. These schedules of costs were obtained from the UCC's. There are a number of different pricing arrangements for universities to access SAP solutions at UCC's. This research has utilized two different scenarios. The first one involves the lower cost option of accessing the SAP ERP for the IDES (International Demonstration and Education System) data set. The second scenario relates to accessing SAP Business Intelligence (BI). In the Americas there is two standard pricing models which are not dependent on the SAP solution, data sets or number of users required. This cost is $US8,000 for Canada and USA and $US5,000 fro the remaining countries in the Americas. For UCC's outside the Americas, pricing is dependent on the level of access required in terms of the SAP solution, data sets and number of users. To access the IDES data set the cost in EMEA is $US4,062 while in APJ the cost is $USD2707. In terms of accessing BI, the cost in EMEA is $US4,062 and $US7,311 in APJ. The APJ cost is higher as BI access can be purchased independently from an ERP in EMEA.

RESULTS AND DISCUSSION

Tables 1, 2, 3 provides the costs ($US) of accessing SAP solutions in the different UAP regions adjusted by GDP (PPP). The tables indicate that it is significantly more expensive for universities in developing countries to access the services provided by UCC's than their counterparts in developed countries.

Table 1 Americas UCC Cost Adjusted by GDP (PPP)

($US8,000 Canada/USA, $US5,000 other countries in region)

Country	GDP (PPP) Factor	ERP –IDES ($US)	BI ($US)
United States	1.00	8,000	8,000
Brazil	4.44	22,000	22,000
Canada	1.21	9,703	9,703
Chile	3.25	16,250	16,250
Colombia	5.66	28,300	28,300
Mexico	3.43	17,150	17,150
Peru	5.32	26,600	26,600

Table 2 EMEA UCC Cost Adjusted by GDP (PPP)

Country	GDP (PPP) Factor	ERP –IDES ($USD)	BI ($USD)
Germany	1.00	4,062	4,062
Austria	0.88	3,574	3,574
Bahrain	0.96	3,909	3,909
Belgium	0.96	3,895	3,895
Bulgaria	2.91	11,820	11,820
Denmark	0.93	3,785	3,785
Egypt	5.57	22,612	22,612
Ireland	0.87	3,524	3,524
Italy	1.17	4,746	4,746
Kuwait	0.88	3,575	3,575
Mauritius	2.77	11,249	11,249
Namibia	5.18	21,028	21,028
Netherlands	0.87	3,539	3,539
Nigeria	15.56	63,209	63,209
Norway	0.64	2,609	2,609
Romania	2.91	11,825	11,825
Russia	2.28	9,242	9,242
Saudi Arabia	1.46	5,943	5,943
South Africa	3.44	13,954	13,954
Sweden	0.95	3,868	3,868
Switzerland	0.80	3,236	3,236
United Arab Emirates	0.89	3,631	3,631
United Kingdom	0.97	3,953	3,953

Table 3 APJ UCC Cost Adjusted by GDP (PPP)

Country	GDP (PPP) Factor	ERP –IDES ($USD)	BI ($USD)
Australia	1.00	2,707	7,311
China, People's Republic of	5.70	15,426	41,661
China, Republic of (Taiwan)	1.25	3,385	9,143
India	12.72	34,439	93,013
Indonesia	8.99	24,338	65,730
Japan	1.14	3,077	8,310
Korea, South	1.34	3,633	9,813
Malaysia	2.75	7,452	2,0125
New Zealand	1.40	3,793	10,243
Pakistan	13.97	37,805	10,2102
Philippines	10.55	28,557	77,125
Singapore	0.75	2,043	5,517
Thailand	4.66	12,625	34,098

There may be more appropriate economic measures to reflect the real cost of these services but no matter what factor is used there will still be a disparity between universities in the developed world compared to less developed countries. It is not the purpose of this research to question the UCC's pricing model or which economic measure should be used for such a comparison. It is more about raising the issue of disparity. If SAP has identified growth markets (Brazil, Russia, India, and China) then how are they going to increase the availability of skills if the cost for universities joining the UAP is a barrier? This barrier is going to be exacerbated for universities in developing countries in EMEA and APJ when they move beyond teaching ERP systems to more advanced products such as BI or SCM as these solutions cost extra. SAP need to address this issue as it is not the responsibility of the UCC's as they need to cover their costs of providing a broad range of services. The UCC's operate on a not-for-profit cost recovery basis and therefore would find it difficult to reduce their pricing. So what are the possible options?

The obvious option could be that SAP subsidizes the cost of universities in developing countries, to access UCC's services. If there is relationship between sales and success of Enterprise Systems and the availability of skills then this would be a strong motivation for SAP to provide such a subsidy. However this may work in the short term but is not sustainable in the long term. At some stage these universities would have to pay for the services. Once the subsidy is stopped then universities may drop out of the UAP due to affordability. An alternative subsidy could be provided by the universities from the more developed countries. These universities could be charged more to offset some of the fees for universities from developing countries. A similar model operates internally in the Americas. There is a standard price no matter what SAP solution, data set or number of users is required. The majority of universities in the Americas utilize only a small component of the resources available by the UCC's. The cost of this level of resources is higher than the similar level of resources offered in EMEA and APJ. However these higher costs offset the cost for universities who want to utilize greater UCC resources.

In industry an approach used to reduce IT related costs is consolidation. In other words rather than having five UCC's these could be consolidated into one mega-UCC. Global companies have proven the viability of this approach (Siemens,). There would be a significant reduction in technology and staff costs which would be passed onto university clients. Language dependent support desks could be implemented in different countries and time zones in conjunction with experienced UAP universities. These support desks would liaise between the local universities and the mega-UCC. This would facilitate the development and roll out of language specific curriculum while access to SAP solutions is centrally controlled. An extension of this approach, and one that is gaining popularity with global companies, is the location of the UCC in a developing country. IBM and Deutsche Bank have located their shared services facility in the Philippines to reduce costs (Manila Standard, 2005). SAP has located its APJ support centre in Dalian in China which supports more than 4,200 customers (SAP, 2004). This approach would further lower the UCC's operating costs and thus reduce the costs to universities. This

may require additional support from the existing UCC's and or SAP while the mega-UCC was being established in a developing country. Some are saying that the "Cloud" (the silver bullet for everything) could provide a possible solution.

SAP has introduced an alternative approach by providing a number of BI reporting solutions (limited license) and associated curriculum to universities free of charge. These solutions require minimal technological infrastructure and administrative support. This may see the provision of "On Demand" (cloud based) solutions or limited license solutions to universities at minimal costs. This will certainly facilitate the growth of the UAP throughout the world and promote SAP skill development.

CONCLUSION

The availability of SAP related skills is an important issue for many economies around the world. However presently there is a significant shortage of these skills. The SAP University Alliance Program has been designed with part of its charter to increase the number of skills in the marketplace. SAP have been very successful with introducing their solutions to university students. UCC's have been established to facilitate the access to SAP solutions and associated data sets to support teaching. Many universities would argue that the benefit to the university and their students far outweighs the associated costs. A barrier for many universities to join the SAP UAP is the cost of purchasing UCC services. This barrier is significant for universities in developing countries. This barrier needs to be addressed if SAP wants to address the skills shortage in these growth markets.

REFERENCES

Deloitte Consulting, (1999), *ERP's Second Wave*, Deloitte Consulting.

Bitterer, A. and Cearly, D. W., (2007), IBM Aims for the Business Intelligence Endgame With Cognos, *Gartner Research* located at http://www.gartner.com/resources/153400/153478/ibm_aims_for_the_business_in_153478.pdf accessed January 2010.

Harris, J. and T. Davenport (2006). *New Growth From Enterprise Systems*. Accenture

Hawking, P., Shackleton, P. and Ramp, A., (2001), IS' 97 Model Curriculum and Enterprise Resource Planning Systems, *Business Process Management Journal*, 7(3), 225-233

Hawking, P., McCarthy, B., and Stein A., (2004), Second Wave ERP Education, *Journal of Information Systems Education*, 15(3), 327-332

Heng, J., (2008), *AP university alliance to attack IT skills shortage*, located at http://www.mis-asia.com/ accessed December 2009

Hill, P., (1986), International Price Levels and Purchasing Power Parities, *OECD Economic Studies*, 10 (Spring), 133-159

LoBue, B, (2009), Building the Global Community, *Proceedings of the SAP Curriculum Congress*, Charlotte, North Carolina

Manila Standard, (2005), IBM opens Manila services delivery center, located at http://www.wdi.umich.edu/files/Resources/GOS/Manila%20Standard.pdf accessed December 2009

McGee, M., K., (2008) *How Bad Is The SAP Talent Shortage*, located at http://www.informationweek.com/news/global-cio/trends/showArticle.jhtml?articleID=207603259&queryText=bulmer%20sap accessed December 2009

Research and Markets, (2009), Software - BRIC (Brazil, Russia, India, China) Industry Guide, located at http://www.researchandmarkets.com/reports/997526/ accessed December 2009

Rosemann, M. and Maurizio, A. A., (2005). SAP-related Education -- Status Quo and Experiences, Journal of Information Systems Education 16(4): 437-453.

SAP, (2004), SAP Launches Global Support Center in China located at http://www.2020software.com/products/news/SAP_America__Inc_307.asp accessed February 2010.

SAP, (2010), University Alliances Member Schools Worldwide Q1 2010" located at http://www.sdn.sap.com/irj/uac/overview?rid=/library/uuid/c08f976d-f3ea-2b10-37b6-d81fb93c9b4b accessed February 2010.

Seethamraju, R., (2007), Enterprise systems (ES) software in business school curriculum an evaluation, Journal of Information Systems Education, 18(1), 69-84

Siemens, (?), Global Harmonization Consolidation of SAP Systems, located at http://itsolutions.lundegaard.cz/files/documents/Global_Harmonzation_and_Consolidation_of_SAP_White_Paper_l.pdf accessed December 2009

Sutton, M., (2010), SAP 2009 results down, but growth ahead, located at http://www.itp.net/579112-sap-2009-results-down-but-growth-ahead accessed February 2010.

Thomas, V., Wang, Y. and Fan, X., (2001), Measuring Education Inequality, *Policy Research Working Paper*, World Bank

Wallgum, T., (2008), *SAP Skills shortage ultimately hurts company*, located at http://cio.co.nz/cio.nsf/news/41108AB9A1B630F0CC2574680032DA2B accessed December 2009

Watson, E. and H. Schneider, (1999), Using ERP Systems in Education. *Communication of the Association for Information Systems*, 1(9), 1-46

Wikipedia, (2010), List of Countries by GDP (PPP) per capita, located at http://en.wikipedia.org/wiki/List_of_countries_by_GDP_(PPP)_per_capita accessed January 2010