

Cloud Center of Excellence (COE) Implementations

An Economic Expansion Catalyst for Emerging Economies

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Abstract

This paper discusses the considerations and opportunities available to emerging economies as they aim to leverage localized intellectual capital, drive their 'tech' economies forward and provide for economic stabilization and employment opportunities within their economic regions.

Emerging economies including nations in Africa, Middle East, Asia-Pacific and Central/South America are well poised to participate in the global economy specific to science and cloud information technology. For economies with low labor rates and high university-level graduation rates in technical fields of study there is a significant opportunity to participate and/or lead in the high growth information technology (IT) field enhanced by the proliferation of cloud-based Infrastructure as a Service (IaaS) and Platform as a Service (PaaS), and Software as a Service (SaaS) technological innovation. When combined with social and mobile platform availability and on-demand cloud platforms, emerging economies can participate in and take advantage of this new realm in IT to benefit their local economies and drive innovation at comparable speeds as their counterparts in the industrialized nations.

The Cloud's Disruptive Potential – Creating Innovation Centers of Excellence

With the proliferation of cloud computing, privately held and publicly traded corporations have been early adopters of cloud technology including IaaS, PaaS, and Software-as-a Service (SaaS) platforms to drive innovation and reduce costs inherent with typical on-premise IT systems. Historically, the move from traditional mainframe data centers to on-premise client-server applications provided the innovation layer the top corporations in the world leveraged to create competitive advantage for their enterprises and customers. With the emergence of cloud computing frameworks, global corporations were further poised to move innovation closer to the customer through rapid deployment of on-demand cloud computing platforms and solutions including social and mobile technology.

While most would agree that innovation tends to occur in the private and/or education sector, and cloud-computing is certainly included in this premise, it is natural for local and national government entities to consider the emergence of cloud computing as a viable platform for consideration to drive innovation, reduce costs at the governmental layer and to provide the innovation catalyst needed regionally or within their national eco-systems to drive economic expansion and higher paying jobs for their populations.

Trend analysis continues to be favorable for cloud computing expansion in emerging economies. According to Gartner Inc., the public cloud services market is forecast to grow 18.5 percent in 2013 to total \$131 billion worldwide, up from \$111 billion in 2012. Infrastructure as a service (IaaS), including cloud computing, storage and print services, continued as the fastest-growing segment of the market, growing 42.4 percent in 2012 to \$6.1 billion and expected to grow 47.3 percent in 2013 to \$9 billion.

"The continued growth of the cloud services market will result from the adoption of cloud services for production systems and workloads, in addition to the development and testing scenarios that have led as the most prominent use case for public cloud services to date," said Ed Anderson, research director at Gartner. "Evidence of this growth is found in the increasing demand for cloud services from end-user organizations, met by an increased supply of cloud services from suppliers."

Although there is wide variation between cloud services market subsegments, strong demand is anticipated for all types of cloud services offerings. The cloud business process services segment (BPaaS) is the second-largest market segment after cloud advertising, comprising 28 percent of the total market in 2012, followed by cloud application services (software as a service [SaaS]) at 14.7 percent, cloud system infrastructure services (IaaS) at 5.5 percent, cloud management and security services at 2.8 percent, and cloud application infrastructure services (platform as a service [PaaS]) at one percent according to Gartner, Inc.

The Opportunities for Cloud-Adoption within Emerging Economies

The opportunity to take advantage of the proliferation of cloud computing by emerging economies is real. It is also multi-faceted.

Countries wishing to capitalize on the expansion of the cloud computing economy must consider several strategic components to this segment of their economy.

First, the low-hanging fruit available to these sectors of the global economy includes adoption of 'current' trends in the cloud computing space. With on-demand availability of cloud computing infrastructure and platforms such as Amazon Web Services and Force.com, national economic advisors and university leaders must understand that 'current-state' opportunities exist now for their global workforce, particularly when tech-sector university student graduation rates are strong combined with globally favorable labor or professional services billing rates. Thus, immediate opportunities exist for these economies where skills are available to drive local business-level adoption of top-tier or best-of-breed cloud computing platforms including SaaS, Social, Mobile and cloud development platforms.

While top providers of SaaS applications such as Salesforce.com, WorkDay, BOX.COM and other cloud-based platforms will continue to drive innovation, the emergence of new platforms will drive opportunities for global and emerging economies. Furthermore, top SaaS providers in today's economic space are seeking to drive opportunities to not only expand their footprint in existing industrialized nations due to

corporate density, driven by a need to hit targeted revenue goals, but to fully realize their platforms' potential in the global realm, with continued global expansion of those platforms in new and targeted economies as well. For example, while initial proliferation of Salesforce.com (a leading SaaS platform) may have been derived in the North American market, it is fully understood that strategic expansion into the EMEA countries and Asia-Pacific economies is central to Salesforce.com's global expansion.

The same holds true for IaaS and PaaS platforms that serve as catalyst for cloud computing innovation, apps, and mobile technology development. Thus, start-up economies in this sector may take immediate advantage by adopting cloud computing technology and by driving university-level graduation rates higher in the area of IT and cloud computing specialized fields. Localized 'expertise' and resources who are able to consult and drive both governmental and private enterprise adoption of the cloud will further enhance adoption of these platforms while providing for economic expansion and higher paying jobs – both favorable to kick-start emerging economies.

Secondly, local colleges and universities provide fertile grounds for driving innovation. They encompass the bright minds ready and eager to absorb information on technology, especially as it relates to cloud computing. Hard work is not a deterrent for these students to gain advance knowledge and they are keen on being the stimulus to lifting the economy out of its current state. A formalized technology training program within the academic walls is a first step towards nurturing a sustainable, highly-skilled technology resource pool within the emerging economy. The same concept can be transferred to the business environment, to help train and certify any local entrepreneurs with well-accepted cloud computing industry certifications such as those provided by CompTIA or Cloud Security Alliance. As this technology resource pool continues to grow, not only does it provide highly competent technology resources for developing new ideas generated regionally, but it also attracts well-established corporations from industrialized nations to leverage the technology talent. All of this impetus drives growth for the local economy.

Thirdly, local and national governments can serve as a strong innovation partner to localized entrepreneurs who may be considering the launch of start-up companies whose aim is to serve the local and national business sector in the area of cloud computing. Without the overhead costs of on-premise software, networking and computing hardware, proliferation of 'start-ups' who may serve as enablers to emerging economies in the area of cloud computing has real potential. These start-ups may be regional players who can 'compete' with the current SaaS Systems Integrator (SI) players and Cloud Service Bureaus and considering local-language preferences, local business understanding and cultural imperatives, localized start-ups are poised to innovate and provide the professional services needed in the area of cloud computing 'adoption' across the local and regional landscape.

Barriers to entry are low in such situations as long as access to best-of-breed SaaS and PaaS platforms is enabled and governmental restrictions are reduced in the area of taxation and corporate overhead, thereby encouraging innovation at the start-up layer. Benchmarking will also serve local innovators and entrepreneurs with real start-up

considerations as local entrepreneurs leverage best practices and lessons learned from current entities in the cloud computing systems integrator space. Capital injection will also be vital for such start-up considerations. Start-ups with outstanding business plans and highly-trained resources to drive innovation through services and cloud application development will need investor-level capital injection and favorable economic support and conditions from local and national governments in order to be successful.

Fourthly, beyond the immediate opportunities identified above, emerging economies have a significant opportunity through the deployment and expansion-of innovation centers of excellence through partnerships with private enterprise, regional university systems and local/regional government entities. Through such a regional and global set of priorities and support, emerging economies actually have fewer barriers to entry than some of their larger competing industrialized nation counterparts.

A prime example of this is in the space of mobile technology. While industrialized nations in North America and Europe were early 'adopters' of mobile and cellular technology, it is well understood that 'upgrades' to mobile technology and cellular technology eco-systems were paramount for these economies to take full advantage of device and application-level innovation in the mobile technology space.

Thus, upgrades of cellular networks within these economies ensued albeit at a slow pace due to the investment and time needed to 'upgrade' key cell networks to the latest levels of innovation. Subsequently, economies such as Brazil were actually poised in a strong way to adopt cellular and mobile technology quicker as their initial mobile technology infrastructure leveraged the latest innovation in the space through early adoption of fiber backhaul, high-throughput switching networks and 4G speed mobile networks without the need for large-scale upgrades to existing systems experienced by other more 'mature' mobile markets.

Perhaps the same holds true in the cloud computing space where regional governments can now leverage the strongest IaaS, PaaS and SaaS platforms in the space to immediately and favorably impact their local and national economies. Thus, governments willing to invest in cloud computing infrastructure to provide Center of Excellence (COE) frameworks to drive innovation, start-up proliferation and application development for social, mobile and SaaS platforms creates a real opportunity for these economies.

Finally, with local and national government support of start-up innovation and through an understanding that adoption of cloud computing frameworks is central to economic expansion, government and private enterprise entities can also serve as catalysts for economic expansion in this area of the 'tech-sector' by combining the collective thought leadership of regional players. Such innovation may include the creation of localized or regional 'think-tanks' comprised of university thought leaders, private enterprise entrepreneurs and investors, and government agencies whose combined role may serve as a strong support platform for local/regional innovation and economic development in the area of IT and cloud computing.

By seeking innovation in the public/private education system, by driving economic conditions locally that 'encourage' risk taking and entrepreneurship, by creating favorable economic conditions with which to conduct business and through the development of regional Centers of Excellence (COEs) supporting innovation in the areas of IT, cloud computing, mobile app development and social platform innovation, these economies are surely poised to take advantage of the proliferation of cloud computing to the benefit of their economies. A 'coupling' of the combined efforts from these various entities will be essential if regional cloud computing COE's are to offer the start-up frameworks needed to drive regional innovation.

Dispelling the Myths of Cloud Computing and Summation

When considering cloud computing COE development, government, university and private enterprise entities will need to address several myths or misunderstandings pertaining to cloud computing.

The first to be addressed is in the area of cloud computing security. While this is a real consideration, due diligence will lead to an understanding that encryption technologies combined with data compartmentalization actually provide the potential for cloud platforms to be 'more secure' than on-premise installed applications whose network protection may not be as strong as one might believe. In fact, one recent study indicated that 49% of on-premise enterprise data centers experienced targeted malware activity versus just 5% of cloud-computing hosted providers (The State of Cloud Security: AlertLogic 2013).

While extreme care regarding security must be addressed in any enterprise-wide or governmental entity cloud adoption portfolio, especially in the area of healthcare and private data situations, security hurdles continue to be cleared as demonstrated by the recent move of global banks, global healthcare entities and even industrialized nation government entities moving toward cloud-computing frameworks.

Secondly, legacy IT players attempt to debunk the strength of cloud computing often out of fear. On-premise software providers and hardware providers will continue to pitch the advantages of on-premise platforms. These efforts are in vain as the scalability afforded through cloud computing platforms is exponentially advantageous to local and regional economies and private enterprises. Enterprises and start-ups will need platforms with which to provide for rapid application-level innovation.

The fact of the matter is that most government and private enterprise (corporate) entities care less about on-premise solutions and tend to focus more on Return on Investment (ROI) models, reduced costs of ownership, rapid innovation and application development potential. Thus, a move towards 'disrupting' the traditional on-premise technology layer will continue.

Professionals who are employed in the on-premise IT sector have significant opportunity available to them through re-training and adoption of cloud-based computing technology. While maintenance, support and deployment of on-premise

software and hardware solutions provided for high-paying jobs for some of these IT professionals, the upside inherent in the adoption of cloud computing technology is far greater than the benefit derived from past on-premise IT careers. Thus, universities must be poised to meet this demand applicable to the emergence of cloud computing while private and government entities must seek to 'encourage' innovation and move of IT skills towards cloud computing technology. Innovation specific to social platforms designed to enhance entity-wide collaboration, innovation in the area of mobile application development, and innovation in the area of IaaS, PaaS, and SaaS technologies will serve these emerging economies well.

It must also be understood as government entities consider the injection of cloud COE's into their regions, that cloud computing is not adopted through the flip of a switch. As with private enterprise, there is often a progressive move towards cloud technology.

For example, a publicly traded entity may have traditional on-premise legacy IT applications. As that entity moves towards the adoption of cloud computing technology, the concept of 'integration' and data 'migration' will be key components of that enterprise's ability to adopt cloud computing technology. Thus, there will be a continued need for the understanding of key on-premise cloud computing technologies combined with the injection of cloud applications and the integration and/or migration of those technologies at the 'data layer' will be key considerations for legacy entities including enterprise and local/regional governmental entities.

Finally, the issue of 'scale' will be paramount as a consideration for local and regional emerging economies to take full advantage of cloud computing. While the multi-tenant nature inherent in cloud computing provides enterprise-level advantages (e.g. and entity 'shares' the cost of the platform with other entities), it is imperative that emerging economies provide 'investments' in the platform and infrastructure-level services needed to drive innovation. For example, an entrepreneur may have a novel world-changing idea in the area of mobile application development. While that entrepreneur or start-up may in fact be able to assemble the resources necessary to execute the business plan, that same start-up may not be sufficiently capitalized to pay for and build out the development, testing and deployment (hosting) infrastructure needed to deliver the application to market on a local or global scale.

It is in this area that regional or local cloud-based Centers of Excellence may in fact derive their highest value: by providing the innovative cloud platforms through which innovators and start-up professionals may rapidly ideate, code, test and deploy innovation to the market leveraging the collective investment of venture capitalist, local university systems and regional governments – for the benefit of all.

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