Web Services: Challenges In 21st Century

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ABSTRACT
“Consumer’s shift from solely purchasing from the retail channel to partially making their purchase with the web based channel”. The quote reflects the scope for web services. A survey says that the sales through web services are just 10% of total sales. There is no doubt that web services are in full boom. Experts believe that overall web services will increase exponentially in the coming years and will provide numerous opportunities. Business to business transactions will represent the largest revenue. On-line retailing will also enjoy a drastic growth. In the area of networking web services provide opportunities like assembly, pricing and payment for complementary infrastructure resources and the selection of and payment for value added collaboration and information access services. In the area of banking opportunities provided by the web services business are superior cost efficiency, widespread access, revenue generation as third party, customization is possible, enhanced marketing and cost selling capability. Number of mobile users is expected to grow faster than the Internet users. Net can be accessed through mobile phones by using SMS and WAP technology. Impact of web services in the world economy is that new technologies have been introduced which has the ability to cut cost, increase competition and improve the functioning of price mechanisms in markets. Web services provide an opportunity to small firms too by lowering cost, improvement in the distribution, reduction in selling cost, rapid market response. Being a potential market certain issues are to be focused. Integration of Internet sale with regular business operation is core issue needs to be supported by inventory management, delivery and payment tracking and order management. Insurance as a solution to risk involved in the use of web services perspective should be given due importance. Legal issues related with companies’ social security number and product’s trademark should be dealt seriously so to avoid fraud. Market access related to web based business, IPR, zero duty on electronic transmission, scopes of GATS w.r.t electronic delivery of service are trade related issues while doing the business globally. The main issue where money is involved is of security and privacy. Threats are to be reduced by educating their customers to the methodologies for practicing the best technique for electronic security and by increasing network security standards. While focusing on this theme, the article also presents the discussion of the key building blocks impacting the opportunities and issues of web based business.

Web services refers to all forms of transactions relating to commercial activities, including both organizations and individuals, which are based upon the processing and transmission of digitized data, including text, sound and visual images. Web services are the carrying out of business activities that lead to an exchange of value across telecommunication networks.

KEYWORDS
Security, Trade, Web design

INTRODUCTION
The growth of Internet subscriber is from 10 lakhs in 2000 to 50 lakhs in 2009. The growth of Internet user is from 35 lakhs in 2000 to 6 crores in 2009. 90% of Internet users are aware of web services business. 10% have made at least one purchase on Internet. Web services revenue in India is from Rs. 10 crores in 2000 to Rs. 475 crores in 2009. Web services penetration will be through personal computer, mobile phones and kiosks. No direct interaction with the customers required. Products are demonstrated online automatically. Orders are places online. It is an improved way of having interaction between buyer and seller. Customers are friendlier with the organization. Consumers and producers can be anywhere for buying and selling of the goods. The buyer can have the comparison of similar products (cost, quality and other features). It is more economical because it saves time and money [2].

PROBLEMS FACED BY PROVIDING WEB SERVICES
Web service is still at an early stage and a number of related issues are not yet resolved - security, privacy, data protection, encryption, copyright and intellectual property etc. The constantly evolving policies and rules governing the Internet and its operations will affect the future of global web based business. Given the enormous economic opportunities at stake for all companies across the world, developing countries should be involved as equal partners in the development of the growing body of Internet governance. In addition to increasing the international visibility of their products, producer firms
from developing countries must overcome a multitude of supplementary obstacles to ensure the successful completion of a transaction once a potential trading partner has been identified. There are various obstacles:

- Awareness: There is currently a lack of awareness and knowledge in developing countries about business based on web. Among the private sector in particular, regional differences in the level of awareness have been observed.

- Infrastructure and access: Physical infrastructure barriers including inadequate telecommunication systems, poor Internet connectivity and lack of access to the necessary hardware and software. Indeed, the gap between industrialized and developing countries in terms of infrastructure and access is huge and growing. The reach and geographic coverage of telephone services, its bandwidth, the cost of telephone services, the national policies governing the telecommunications sector and the number of computers are major determining factors to what extent developing countries and their private sectors can partake in the global push for web based business. The impending satellite revolution may well facilitate access and connectivity although it is not yet clear whether the pricing structure for these satellite links will be affordable for actors in the developing world.

- Human capacity and skills: Web service requires a different mix of capacities and skills, which is another major constraint in developing countries. It should become one of the priorities of developing countries to promote computer literacy and Internet-related skills among the workforce at large and especially among the SMEs. There is a requirement to retain and train the skilled professionals.

- Legal and regulatory framework: A proper regulatory framework must be in place for web services business to prosper. Existing laws and regulations might not be applicable as some of the online services do not exist in the physical world and boundaries between services as well as industries have become blurred.

- Taxation: Taxation is another issue of concern and contention. As the Declaration on global electronic commerce of 1998 stands, there is a moratorium on the imposition of customs duties on electronic transmissions. However, if there is the projected dramatic shift from physical transactions, normally subject to sales and other taxes, to virtual online transactions, free from any transaction tax, the tax base of local and state governments might become eroded.

- Financial institutions and intermediaries: Thus far, financial institutions and banks in developing countries are hesitant to take an active role in promoting business based on web. However, merchants need the involvement of banks to broaden the reach and appeal of web services and to help prevent fraud and potential losses attributable to credit card fraud. But beyond the credit card approach, banks and other financial service intermediaries are challenged to develop alternative modalities for secure and reliable online transactions in environments where credit cards are not commonplace.

- Inadequate transportation and distribution networks: There is need to give high priority to strengthening logistics and transport infrastructures to support time-sensitive, increasingly tightly integrated, global supply chains.

**TRADE ISSUES**

For web services to be a truly global tool for trade and development, a ‘global information infrastructure’ (GII) that makes possible the electronic exchange of information about products and services, buy and sell orders and financial transactions is a necessary pre-requisite. GII access is a necessary but not sufficient condition for the development of web business. For it to be operational worldwide it is essential to create a policy and regulatory environment that favors the development of web services and harmonizes national approaches in diverse areas including telecommunications, trade procedures, intellectual property, privacy and security. There is therefore a need to promote the development, expansion and operation of telecommunication networks and services in developing countries, as they lack such an infrastructure [3]. The ITU (International Telecommunication Unions) is undertaking some initiatives on these matters such as bringing various partners together to undertake pilot projects in developing countries to demonstrate the benefits of electronic commerce to the user communities of these nations. Such initiatives need to be replicated by several other international bodies that deal with trade, industry and development. Involvement of the developing countries and assistance to them for improving their expertise and infrastructure are some of the key requirements of the future. When we talk about trade through business based on web, it eliminates geographical distances in bringing buyers and sellers together but there are certain points whether there would be custom duty on electronic delivery of goods and services? Who would be responsible for setting these rules and standards and who should enforce them? What will happen in case of copyright and Intellectual Property Rights related issues? Would electronic delivery of services fall within the scope of GATS? Web services may have implications on the revenue and fiscal positions of nations and the importance of developing human resources and critical infrastructure in this regard.

The Institutions that have direct responsibilities for governing international trade have tended to take a cautious approach to the governance of business done using net. This approach:

- Gives web services ‘breathing space’ from conventional trade rules so that it has room to grow (e.g.
through the WTO-agreed moratorium on imposing customs duties on electronic transactions)
- Examines the impact of web services business on existing patterns of trade, as well as its implications for current rules and practices (e.g. the WTO web services program).
- Analyses the potential benefits of web services for developing countries, identifies practices and develops models that will facilitate the growth of web services within and between countries, raises awareness of the potential benefits of web services and builds capacity in developing countries (e.g. the work done by UNCTAD and the ITC, the model laws on web services and electronic signatures developed by UNCITRAL, the electronic document interchange (EDI) models and recommendations developed by UN/CEFACT).

WEBSITE DESIGN ISSUES
For web services when the website is designed we know that the explanatory tasks are best supported by a network or combination of information structure. While searching tasks are best supported by a hierarchical information structure. Building upon our understanding of issues involved in web navigation in the web services context in the concept of three buying behaviors: product search, search criteria and product comparison. In order to succeed in web based business, online vendors need to begin with a user friendly and trust – worthy website so that users feel comfortable and confident interacting with it [4]. The website should facilitate product search within a short amount of time and must provide users into a good sense of control over the interaction e.g. a privacy policy and tight security controls should be in place, information on all aspects of the customer relationship should be clearly stated on the websites. Due to these reasons, web usability and establishing a climate of trust are crucial and necessary factors for web services success. The lack of trust or the difficulty of cultivating trust in an online environment poses a major hurdle to the future of web service business.

SECURITY ISSUES
A recent report from Forrester Research titled “ Sizing the security market” predicted spending on IT security at $25.7 billion by 2009. Business will continue to pour this money into external security spending rather than key business area. Security framework should be built into processes that will function. In near future security staffing can be internal or external because outsourcing and consulting can return value rather than overtaxing an internal staff that is not providing full time security[5]. The frauds are increasing, so information has to be secured by all means. The consequences are that the lack of security is making the life of the customers full of fear and distrust is still in the mind of the customers, this is the reason of volatile customer retention factor. More alarming to the wired public is when the 16 digit numbers that tie the world together in the exchange of goods and services are taken deep inside data centers with no personal means for maintaining confidentiality. This year began with the disclosure of the outsider breach of Travel city’s customer’s names, addresses, phone numbers, and e-mail addresses. In early 2000, the hacker who conceals his identity with the alias “Curador” seemed to bask in the publicity as he revealed his theft of 2,000 records including credit card numbers from web service broker Sales Gate. Curador also hit shoppingthailand.com, promobility.net, and LTAMedia.com to become privy to over 5,000 credit card numbers, which he posted to a publicly accessible web site until the host removed it. Somewhat amusing though controversial is how Curador has left his mark by thanking Bill Gates for creating “SQL servers with default world readable permissions.” Recent advances in encryption techniques have made it possible to ensure the safe transmission of credit card numbers and other sensitive information needed to facilitate payment electronically is backed by trust and authentication services. One common trend is the use of application service providers (ASPs) for hosting of web sites. This is especially prevalent among small- and medium-sized businesses, which could suffer terminal consequences on compromise of their systems. CGI-bin vulnerabilities are a classic example as the outsider can flood or manipulate an entry box when making a web transaction. Cross-site scripting has come to light where the end user web browser unknowingly hits a hyperlink that inserts malicious code enabling the intruder the chance to intercept credit card numbers. Key-finding attacks where cryptographic private keys are compromised are also a looming threat, though quite often insiders perpetrate this. Thus exploitable holes are numerous for the conniving intruder, and it will take a stronger drive in the web service industry to reduce the threats to financial necessities of business, while keeping pace with the vulnerabilities introduced by new applications and technologies.

Worldwide FPN (Fraud Prevention Network) was formed by American Express and e-tailers such as Amazon.com and Buy.com to establish common grounds for reducing the threats created by increasing reliance on the Internet for web based business. Membership has expanded swiftly to now include 575 large and small players that are united to promote the growth of web services in large part by keeping fraud to a minimum. Some of the recommended strategies for merchants advocated by this group include: obtaining real-time information from a credit card company, use of address verification systems, use of credit card verification codes, purchase of rule-based detection systems, and purchase of predictive statistical models. Visa uses third-party security assessments to build its own evaluation and weigh these against benchmarks of competitors to develop compliance standards. Visa has also recently launched Global Security Web to serve as an information resource for merchants. This site includes a program for a security self-assessment to help merchants find out what the weak and strong points in preventing unauthorized access to their information. Great success is possible for those businesses which implement web based business. Just as there are legitimate opportunists who
play fair, there are opportunists in the criminal element hoping to seek small fortune or destroy someone else’s dream.

SECURING WEB NETWORK
A web service operates on and through communications networks, principally the Internet. Therefore, safeguarding the integrity of your Web site and its associated software and data is critical, especially where 24x7 operation is expected [1].

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<th>INFORMATION SECURITY ISSUES</th>
<th>KEY ACTIONS</th>
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<td>Malicious or opportunistic damage may occur if the network safeguards fail to prevent unauthorized access to the corporate network, when it is open up for Web based business</td>
<td>Consider establishing a secure area, entirely separate from internal network, perhaps a DMZ, to cut off all and any network traffic that is not explicitly permitted access through firewall and router configuration. Top of Form</td>
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<td></td>
<td>Insist that all administration of the Web site may only be undertaken from a dedicated workstation, via a secure network or leased line.</td>
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<td>Add supplementary authentication techniques, such as smart cards, to provide a greater degree of access control to your Web site and its data files.</td>
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<td>If the network access controls to Web server are poor, the site may be subject to unauthorized access ('hacked'), leading to theft (e.g. of credit card numbers) or corruption of data.</td>
<td>Where ISP hosts Web site, detailed safeguards to protect unauthorized access should be made available and scrutinized for adequacy.</td>
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<td>Ensure that strong access control procedures are in force to restrict internal access to Web site</td>
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TRANSFER OF TECHNOLOGY
The outcome of outsourcing is that it lead to transfer of technology from developed to developing countries, which involves questions of investment, expertise government politics, market access etc. A developing country that encourages electronic web services and with a climate conducive to investment likely to attract foreign investment in sectors related to it.

INSURANCE ISSUES
It has been observed that customers are aware of risk inherent in the use of Internet to conduct business and continued reliance on internal computer system, network. The insurance industry is forward to insure third party liability and first party risks related to web service activities. The insurer have developed the liability policies which cover claims for injury or damage because of error, wrong act, the computer virus, infringement of IPR, the invasion or infringement of right or privacy or publicity etc. The first party policies cover lost income and extra expenses because of “crash” of the insured computer system or website, loss of data, software, the denial of access to the insured’s website(s). Some insure sell only third party liability policies. These policies are generally taken by dot com start up companies. The fortune 1000 companies take up generally with first party web service insurance issues are to risk be addressed as:

- What potential gaps exist in traditional insurance policies i.e. web services risks.
- What alternatives risk transfer mechanisms are available to finance web services risks.
- What are the new stand-alone insurance products for web services risks?

Back – End Issues / Processing The speed and accuracy of various processes that go in managing an web services store are very important. The most important behind the scene activities in a well built e – business:

- Inventory and resource management is ensuring you have the product when it is needed and dealing with supply and demand factors.
- Nurturing the customer relationship solving their queries properly, making a transparent revenue generating info.
- Delivery of goods or services in time to the correct location and acknowledging the money transaction can make e – business effective
- Stock management – any kind of stock i.e. book, electronic goods, jewelers etc. electronic stock management is must. The inventory database related to website must be linked to back office environment. You must have control upon staff i.e. person hours per project in order to meet the deadline related to delivery of good, getting paid is just as important. On the Internet, watch out for expensive payment methods.

CONCLUSION
Web based business, though it is still in an embryonic condition, is growing rapidly and is likely to have a dominant position in the knowledge economy of tomorrow. Already its economic impact is much greater than was predicted not so long ago, as it is not limited to the Inter-net, which, though its
role as a catalyst is important, is only one of the media involved. The business community, for its part, cannot stand arool from this new trading dynamic: they must take advantage of the many opportunities offered by web based business. Even though the obstacles are considerable and there are many challenges to be met, ignoring this new form of trade is hardly a viable solution. Web service is no longer a “virtual” reality, but a concrete one, and has to be dealt with on many fronts: legal, fiscal, economic and social issues require urgent actions.

FUTURE SCOPE
The challenges discussed in this paper will be the new area of research work. Further new techniques can be developed and implemented in providing solution to the problems.

REFERENCES: