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Evolution of Insurance Sector: A Global Perspective

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Received Sep. 3, 2013, Revised Sep 19, 2014, Accepted Nov. 17, 2014

ABSTRACT

Insurance markets have changed radically in the last 20 years. There are some key developments in insurance as well as financial services market which has a greater impact on global scale. It influences globally with some constraints. The insurance marketing has become a vital part of some national as well as international market. The incremental development focuses on cultural, legal, institutional, and demographic consideration that impact the emerging global trends. The authors attempt to address the global similarities of national insurance market and the local contingencies that create differences among markets. The purpose here is to analyze the global insurance industry and to show the diversity of insurance market at large.

Keywords: Insurance marketing, global scale, development
INTRODUCTION

The World insurance markets are described having various key economic indicators like annual premiums, the relative importance of life and non life products, insurance concentration, and insurance density. World insurance premiums represent US$ 3,723 billion in 2006 (Swissre). International insurance markets can also be differentiated by their insurance penetration. Some insurance markets are characterized by high levels of insurance penetration.

The world’s Insurance market have some important global similarities such as deregulation, intensification of competition generally rapid growth in insurance sales, the emergence of new distribution channels and the convergence of Insurance banking and other formerly separate segments of the financial services industry. However, there remain many important “local” differences among insurance markets across the world. The first known insurance product in history was hull and cargo insurance, which was created in Mesopotamia. The idea was to insure the vessels and their contents for their national and international travels. Still today, hull and cargo insurance is mainly underwritten under international rules, i.e. with international contract specifications largely shared by the international competition. Other types of insurance are also structurally global. Space satellite insurance, aircraft insurance, and insurance of large risks are shared by international insurers. Furthermore, the high insurance concentration in which the top five countries, the United States, Japan, The United Kingdom, France, and Germany, represent 67.3 per cent of the world insurance premiums, leads to the phenomenon of risk concentration. The insurance sector is also structurally global through the mechanism of reinsurance and insurance financing. The reinsurance market is quite concentrated, with eight countries (Germany, the United States,
Switzerland, the United Kingdom, Bermuda, France, Japan, and Ireland) representing 89 per cent of the global reinsurance premiums (Standard and Poor’s, 2006). Other emerging countries such as India and China are experiencing increased foreign participation in their insurance markets. Indeed insurer internalization has been facilitated by the world wide process of deregulation. Starting in the 1980s, two countries, the United Kingdom and the United States, were pioneers in the deregulation process. Following their example, significant deregulation at the national and regional levels has occurred elsewhere, e.g., in Europe and in Japan. This deregulation has facilitated the integration of previously fragmented segments of the financial services market, primarily insurance, banking, and securities dealing and underwriting. The European Union’s banking and insurance directives, implemented during the 1980s and 1990s, had the objective of creating a single European financial services market. The directives have led to widespread consolidation in the financial services markets in Europe, with large number of intra sector and cross sector mergers and acquisitions (Cummins and Weiss, 2004). The EU directives also deregulated insurance markets, with the expectation of solvency regulation, which is carried out by each insurer’s home country. This led to the introduction of true price competition in European insurance markets, where prices were previously strictly regulated at the nationally.

For example in Germany, since the deregulation of the Insurance Supervision Law in 1994, the products offered by licensed insurance companies are no longer subject to prior approval by the supervisory authority. There is no direct price regulation for any line in the German insurance market, and the suppliers of insurance coverage are, in general, free to compete on premiums as well. The EU member states have experienced an
increase in cross border insurance competition. In France, the market share of foreign insurers has doubled between 1990 and 2006. The European directives could have some significant influence on other non European members. For example, Norway despite being not a member of the European Union is largely influenced by the EU regulatory changes.

Similarly, in Japan, the ‘Big Bang’ financial reforms of the late 1990s aimed to make the Tokyo financial market comparable in scale and in the variety and sophistication of financial products to markets in London, New York, and continental Europe (Dekle, 1998; Hoshi and Patrick, 2000). Among the reforms primarily affecting the insurance industry is the elimination of the ban on financial holding companies (FHC), which can now own firms dealing in various types of financial services, including insurance. The reforms also eliminated restrictions that prevented financial services firms from competing in each other’s markets, so that banks, life insurers, and property casualty insurers can now offer financial products other than their traditional offerings. The reforms are expected to lead to more competition in financial markets, although research on the effects on insurance markets has been limited thus far.

The passage of the US Financial Services Modernization Act of 1999 (the Gramm-Leach-Bliley Act) removed most of the remaining barriers that restricted competition across sectors of the financial services industry and allowed the creation of FHC, which can engage in bank and non bank financial activities through subsidiaries. Although there has so far been minimal merger and acquisition activity between the banking and insurance industries, banks and insurers compete intensely on the sale of annuities, life insurance, and mutual funds at the retail level and in pension fund and asset management at the wholesale level. The United States has long been a hospitable environment
for foreign insurers to enter the market, primarily through acquisitions of US insurance companies, and major global financial services firms have made major in roads in the United States, particularly in the market for annuities (Cummins, Eckles, and Zi, 2006).

Another major trend is that various supranational agencies, including the World Bank, the Inter American Development Bank, and the WTO have been key promoters of globalization throughout the world. The WTO was created in 1995 to promote free trade through international negotiations between various nation states and members of the organization. In the 1990s, protest demonstrations during the various WTO meetings were characteristic of the misconceptions about globalization.

The effect of the WTO on insurance markets is apparent in the Chinese market. With China’s entry into the WTO in 2001, the Chinese government made significant commitments with respect to liberalizing the insurance sector and thus led China’s insurance industry into a new stage of development. The current stage is characterized by an overall opening of the market instead of the previously limited and restricted opening. Due to the changes facilitated by the WTO, it is now much easier for foreign financial firms to enter the Chinese insurance market, and foreign firms have begun to compete intensely in China. Although the competition currently is mostly in terms of joint ventures, China’s WTO commitments will make it even easier for foreign firms to enter the market in the coming years.

In addition to the developments in China, various international bodies such as the World Bank have influenced insurance and financial markets in South East Asia, with significant intervention triggered by the Asian currency crisis of 1997. The creation of a European single market has accelerated the internationalization of insurance companies. This is
particularly true in Europe where national insurers initiated cross border expansion when the single market was created. Thus, the internationalization of European insurers increased in the mid 1980s and accelerated in the 1990s following the introduction of the Third Generation Directives in 1994. Some insurance companies reoriented their international exposure from their historical roots (e.g., in Africa) to become more European based.

Another major trend is the privatization of the international insurance market. Many countries which previously relied on government insurance companies and programs now have private insurance companies as dominant economic actors. Many such countries have witnessed major waves of privatization. The number of government owned insurance companies is becoming smaller, and some countries have almost entirely eliminated government run insurance companies. Presently, this trend is occurring not only for some developed countries such as France but also for former Eastern block countries and emerging economies (Venard, Halek, and Dorfman, 2008). The Indian government authorized the development of the private sector in 2000. Since 1988, China has also seen the gradual dismantling of the former government insurance monopoly, the people Insurance Company of China. Brazil had a “nationalization” program in 1937 in which all insurance companies had to be Brazilian, no company could be fully controlled by foreign partners, and local majority participation became the rule. In 1996, the Brazilian market was opened again to international investors. The impact was immediate with an increase in the foreign company market share from 6 per cent in 1996 to the current figure of 30 per cent.

Insurance globalization has also been facilitated by the technical revolution in transport, communication, and data processing. In the eighteenth century, it took 4 days for a letter to go from London to a city 300 Km away (O’Rooke and Williamson,
1999). In nineteenth century France, an insurance contract needed three weeks to be sent from Paris to Bordeaux and back (Venard & Hanafi, 2008). To handle important articles, insurance companies needed vast work forces and significant bureaucracies.

When the information revolution began, insurance companies and other financial intermediaries were among the earliest adopters of computer technology to automate the internal processing of financial transactions. Previously labor intensive back office and front office functions are now organized through computer technology and telecommunication networks. Between 1994 and 1999, for example, the real cost of recording, transmitting and processing information declined by more than 95 per cent. The emergence of around the world, around the clock financial markets represents a classic example of space time compression. The insurance industry is characterized by the central role played by information processing. Therefore, more than in any previous era, the growth of international communication, the development of computer power, the spread of information technology, the reduction in telecommunications costs, and the socialization among customers promoted by the Internet are major driving forces behind the changes in today’s global insurance companies.

Among the global trends, the need for health insurance and pension reforms is present in many countries and forecasted to occur very soon in others. Health systems are in need of huge transformations, both in developed countries where the systems are too expensive and in developing countries where health services are insufficient. Because many government social security programs have been based on pay as you go funding schemes, decrease in the ratio of working age persons to retired persons has forced many countries to consider scaling back their public pension systems. This provides an opportunity for financial firms
to exploit the growing demand for supplemental retirement programs funded by life insurance and annuities and should provide growth opportunities for insurers in many markets.

Of course, local contingencies play an important role here in terms of widely varying tax incentives for private savings through insurance and annuities. For example in France, due to tax incentives, insurance savings products grew from 42.2 per cent of total consumer investment flows in 1990 to 76.1 per cent in 2000. Less attractive incentives in the taxation of life insurance revenues for the duration of the policy have resulted in a relative decline of insurers’ share of net investment flows by about 20 per cent from their peak in 2000. Another example is the Netherlands, where in 2001 the maximum tax credit for life annuity premiums was significantly reduced. As a result of the tax changes, tax driven life insurance purchases decreased substantially.

The continuing evolution of insurance product distribution system is another common element among many national insurance markets, although this does not mean that distribution channels are similar everywhere. Particularly in the consumer lines of insurance, direct marketing and bancassurance are likely to play increasingly important roles. The principal advantage of direct and bank distribution of insurance is that the marketing costs tend to be lower than they are through the traditional insurance distribution channels such as brokers and agents. The result is that direct and bancassurance marketers can offer lower prices and higher rates of investment return on savings based products, giving them an important competitive advantage. In the commercial property casualty lines, it is likely that intermediaries such as brokers and agents will continue to play an important role in helping commercial buyers access the increasingly complex and global markets for risk transfer.
LOCAL PARTICULARITIES

If globalization is making the world a more homogeneous place, there are still many local particularities. Indeed the convergence of insurance markets worldwide and the convergence between insurance and other segments of the financial market are far from complete and many differences among countries continue to exist.

The investment relationship between insurance companies and financial markets is also quite heterogeneous. For example, during the bubble period, Japanese life insurers invested large amounts of funds in foreign securities markets. As life insurance contracts are denominated in Japanese Yen, foreign investments are accompanied by foreign exchange risks. When the yen appreciated against the US dollar, Japanese life insurers suffered extensive foreign exchange losses. A different example is provided by the Brazilian market. In this emerging market, only one insurance company invested its assets in the Brazilian stock market, Porto Seguro. In fact, Brazilian insurance companies invest over 90 per cent in government bonds.

All countries have their own political systems, and this diversity has an impact on the insurance industry. For example, at the end of apartheid in South Africa in 1994, a Black Economic Empowerment Program was set up. Its mission was to transfer equity ownership in firms throughout the economy to the black community. The South African Financial Sector Charter requires that 25 per cent of the equity of financial companies must be transferred to black, because the former segregation implied that most of the country’s assets were in the hands of the white minority. In South Africa lobbying from civil servants has considerable influence on their pensions, where they pay as little as possible to get as large a payout as possible.

Most developing nations have age distributions that are generally much younger than in the developed world. The consequences of demographics are especially significant for the pension market and
therefore the life insurance market as well as the health insurance market. However, significant demographic differences exist even within developed country. In Europe, Ireland and France are experiencing a minimum level of growth in their populations, while Italy and Germany are witnessing population declines. Without taking into account migration, these intra European differences are even more significant.

Thus India has a Tariff Advisory Committee, called IRDA (Insurance Regulatory Development Authority) which is in charge of setting a minimum price. When third party liability became unlimited, the premiums should have increased, but political pressure from transporters prevented the premium rise (Malhotra, 1994).

Another example is Ireland, which is the only country in Europe in which insurers are required by national health regulation to offer open enrollment, community rated premiums, lifetime coverage, and minimum benefits policies. Open enrollment provides that insurers must accept all applicants for insurance coverage under the age of 65, regardless of health status, subject to prescribed waiting periods. There is no penalty for those individuals who would like to transfer from one insurer to another the principle of community rating requires that insurers must charge consumers the same price regardless of age, sex, or health status. Lifetime coverage means that insurers must renew contracts as long as they continue to operate within the market. Health insurance contracts must also provide benefits above a prescribed level, which referred to as the “minimum benefits level”.

The role of ecommerce in the insurance industry varies widely among countries. For example, in many developing countries, a large share of the population has no access to telephones or bank accounts, and, therefore, ecommerce in insurance has a long way to go. In Germany, hopes about selling insurance through the Internet seem to have been dampened by the fact that most insurance contracts have complicated structures and require a considerable amount of consultation which is difficult to provide via the Internet.
An interesting example is in Brazil, where brokers are required for any insurance transaction. When a Brazilian bank decides to distribute insurance products, the bank is required to create a brokerage company. Therefore, brokers have officially 100 per cent of the market share of the Brazilian distribution channels. For example, the US market has various types of agents such as exclusive agents, independent agents, and career agents (the last only for life insurance), whereas other countries have only one type of agent, such as France (in fact only exclusive agents).

In life insurance, brokers are very important in insurance distribution in the UK with 61 per cent market share in 2003, and in Canada, with 44 per cent of the market but have limited influence in Germany, with 28 per cent market share, and even lower in France, with nine per cent market share (2003), and Italy with 0.8 per cent (2003).

In the non life business brokers have a very large market share in Canada, with 70 per cent of the market and in the United Kingdom with 55 per cent of the market. However, brokers have only 7.5 per cent of the market in Italy, 11.4 per cent in the United States, and 19 per cent in France. Agents are the principal distribution channel in Japan for non life insurance, with 91.6 per cent market share in 2002, and in Italy with 85.2 per cent in 2003. They are less important in other markets such as France, with 35 per cent market share in 2003, and Canada, with 25 per cent share also in 2003. Comparing international statistics could be difficult since the same word could correspond to different distribution channels. For example, in the United Kingdom, direct sales include sales through telephone, internet, etc. (22 per cent market share in 2003) but also employees from companies when in France direct sales does not include the employees (with therefore a much lower market share than in the United Kingdom, three per cent in 2003).
The diversity of distribution channels is increasing, with a growing number of new distribution channels being created. For example, in the Netherlands, different kinds of ‘exotic’ intermediaries such as oil companies, supermarkets, football clubs, car dealers, and drug stores have entered the Dutch insurance market. The degree convergence between banks and insurance companies is heterogeneous across the globe. Bancassurance is small in Germany, but important in France, Spain, and Italy. Banks are now the main insurers in the French life and non life insurance markets. French banks increased their market share in the life business from 39 per cent in 1990 to 62 per cent in 2003. In Spain, bancassurance is the most important channel with 62 per cent of life premium volume in 2002 and 74 per cent of new production of life premiums. But in the non life insurance segment, Spanish banks account for only 5 per cent premiums. In Italy, banks represent 59 per cent of the life insurance market (in 2003) but only 1 per cent of the non life market. In India in 2004, private insurers sold more than 30 per cent of their life policies through banking channels.

In Germany the idea of a conglomerate offering both banking and insurance services (also called Bancassurance) might be another driving force for merger and acquisition activities. However, the prospects for bank insurance mergers were damaged by the unfavorable experience in the Allianz/Dresdner Bank case. Following the Allianz acquisition of Dresdner, the banking subsidiary experienced losses in its core activities and achieved only limited cross selling advantages for the insurance business. In the United Kingdom, Bancassurers held 20 per cent of life insurance and 25 per cent of the non life insurance market in 2003. In the United States, banks have captured a significant share of the annuity market, primarily by selling annuities manufactured
by unrelated insurance companies rather than serving as insurance underwriters.

We should stress that in most countries, supervision is different between insurance and banking. For example, in the United States, insurance markets are regulated at the state level, whereas banking regulation is primarily a federal activity. However, this is not the case everywhere. For example in the Netherlands an Authority of Financial Markets was created in 2004 to supervise all banks, insurance companies, pension funds, and the investment sector in general. Similar supervision convergence has taken place in the United Kingdom (since 2000), Japan (since 2000), France (since 2003), and Ireland (since 2004).

The portfolio of insurance products in various countries shows important variations. Some countries have a buoyant life insurance market, reaching sometimes two thirds of the insurance market share. In India, for example, the life insurance market is almost four times as large as the non life market. In other markets, automobile insurance remains the primary insurance product. Thus, in 2003, as a proportion of total non life insurance premiums, automobile insurance accounted for 50 per cent in Canada, 48 per cent in Japan, 44 per cent in France, 41 per cent in Germany, 40 per cent in the United States, 22 per cent in the United Kingdom and 62 per cent in China. Further more some countries have low insurance penetration while others are witnessing more significant penetration, especially in developed countries. Tax laws, which differ significantly across countries, are critically important in the development of the life insurance market in particular. Demand for life insurance and annuities as savings, investment, and pension products are heavily dependent upon tax incentives provided by governments.

Some countries have unique insurance products, which exemplify of the world’s insurance product diversity. In Brazil, a
unique product is the capitalization, a savings account that features planned periodic payments into a fund with a national lottery attached. Typically half of the face amount is returned after 1 year with a fixed interest rate and the other half is used to finance the lottery winnings. Offered by private insurance companies and linked to the federal government’s lottery, it is the only authorized private gambling product in Brazil.

Within the various national insurance markets, insurance companies have adopted a diversity of strategies. For example, AXA has maintained a heterogeneous portfolio of life and non life insurance products, while ING and Prudential have decided to focus on life insurance. Some companies, despite being quite important in their home markets, have marginal international activities. For example, MACIF a French mutual society is a leader in the car insurance business in France but has no foreign subsidiary. On the contrary, Allianz has an ambitious world expansion strategy. Also, some companies have a world wide dominant distribution channel strategy such as Prudential, while others have invested in a variety of distribution networks, such as Generalli, Allianz, or AXA.

Another example of strategic policy diversity is the existence of various investment strategies of insurance companies. For example, loans accounted for a quarter of total assets of Japanese life insurance companies in 2004. For many years, loans were the largest component in Japanese life insurer’s investment portfolios. The share of loans was 67.9 per cent in 1975, consisting mainly of loans to blue chip companies. As blue chip companies have accumulated sufficient retained earnings and increased their dependency on securities markets, it became difficult for insurers to find appropriate borrowers. In India, loans from life insurance companies to state and central governments and their corporations and boards has steadily fallen from 42 per cent in
1980 to around 18 per cent at present. Loans are usually a marginal asset for insurance companies in other markets. The percentage of life insurance company investments in bonds is also diverse: 95 per cent in Brazil (2004), 70 per cent in France (2003), 50 per cent in the United States, 41 per cent in Canada, and 35 per cent in Japan.

In 2003, the top 10 life insurance companies held a market share of 99 per cent in India, 87 per cent in China, 78 per cent in Japan (for individual insurance), 64 per cent in France, 62 per cent in Germany, 54 per cent in Italy, 55 per cent in the United Kingdom, 47 per cent in Canada, and 40 per cent in the United States. The same heterogeneity of market concentrations is present in non life insurance. In 2003, the top 10 non life insurers held a market share of 96 per cent in India, 94 per cent in Japan, 92 per cent in China, 79 per cent in the United Kingdom (accident and health), 60 per cent in Germany, 57 per cent in France, 58 per cent in Italy, 53 per cent in Canada, and 39 per cent in the United States. Far from being homogeneous, today’s insurance markets are characterized by significant diversity, creating challenges and opportunities for insurance companies. Analysis of the world insurance market shows that there is still no convergence in terms of firms’ strategies.

CONCLUSION

The insurance market and its operation is very dynamic. Here we analyzed the growth of insurance market of different countries. It has been observed that country like UK, USA, France, Canada, Brazil, the insurance market has its own base. The international insurance markets show their significant diversity. This heterogeneity contradicts the common belief that
globalization has already homogenized the various national markets around the world. In fact, today’s insurance markets are both influenced by global trends and also local constraints and difference. Before describing the various key global and local insurance, we provide a discussion of globalization.

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The Tools to Promote the Development of Marine Biotechnology in Primorski Region

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Received Dec. 5, 2013, Revised Apr. 22, 2014, Accepted Jun. 24, 2014

ABSTRACT

This study presents the tools to promote the development of Marine Biotechnology in Primorski Resion, Russia. This study was conducted a survey based on the marine biotechnology industry perspective to identify the best practices. In the clause tendencies and problems of development of a fish economy in region are considered. The conclusion about necessity of creation of new technological platforms becomes. Tools of assistance to development of sea biotechnologies in Primorski Territory come to light. The study will provide the marine biotechnology policy-makers with more insights to develop appropriate marine biotechnology policy.

Keywords: Fish economy, sea biotechnologies, innovations, prospects

INTRODUCTION

Primorski Region benefits from access to an enormous and diverse set of aquatic biological resources, which largely unexplored,
underexploited and understudied. Meanwhile, marine ecosystems provide a unique environment with an enormous potential to contribute to the sustainable supply of food, energy, biomaterials and to environmental and human health. This paper presents a range of considerations and options for the content and approach for a potential future fish-industry activity on marine biotechnology.

Fish-industry activity (FIA) traditionally occupies special position in economy of Primorski Region. The Institutional transformations, which are conducted in our country in 90th of last century, stagnation in fish industry has led. Strategic tasks on provision of food safety and accomplishment of the social functions connected with city-forming character of industry in Primorski Krai, have been removed on the second plan. At the same time, primorski fishermen will underuse the raw-material base in some kinds of water biological resources, many of which have powerful biopotential. For example, the seaweed forming essential accumulations at seaside coast, can serve as raw for the most different industries, including food, chemical, building. Besides, trade objects of fishery practically aren't processed in a complex and deeply, casual objects of fishery are thrown out a board, a waste from cutting of fishes and nonconforming products isn't used. Among other fish-industry enterprise structures apply obsolete, ecologically dangerous technologies of processing of hydrobionts that is inevitably reflected in quality of produced goods. Meanwhile, new, perspective technologies not only can promote transformation of available resources to qualitative and necessary products, production efficiency and competitiveness of enterprise structures to a great extent depends on them. Thus, the technology in itself is the major resource FIA. In fish-industry to practice the marine biotechnology which is engaged in studying of active potential of the biological marine environment for the
purpose of its application in practical activities has good prospects of development. Marine Biotechnology encompasses those efforts that involve marine bioresources, either as the source or the target of biotechnology applications. This sphere could become the powerful lever of serious technological break of regional fish industry that will allow to solve many socially-economic problems.

MARINE BIOTECHNOLOGIES DEVELOPMENT

Marine Board-ESF Position Paper 15 on Marine Biotechnology together with the scoping paper of the EU KBBE-net Coordinated Working Group on Marine Biotechnology (CWG-MB) provide a comprehensive overview of the European research priorities for marine biotechnology research and identify some potential areas of common interest which might benefit from transnational cooperation in Europe. Marine Board Position Paper 15 on Marine Biotechnology analyzed the contributions Marine Biotechnology can make to address key societal challenges and identified the associated future research priorities. These are summarised in below table 1 (Marine Biotechnology in the European Research Area, 2013).

Development of business on the basis of marine biotechnologies in Primorski Region can be performed in following directions (Mezenova, 2008):

1. Complex processing of hydrobionts for reception of albuminous products, lipids, mineral substances, healthy food, fodder and technical items. Complex processing allows to create the closed cycle on reception of food, fodder, medical and technical products from industrial wastes, including is direct in fishery places that considerably increases value added, expands release assortment, minimizes losses of production at the maximum use of biopotential of the sea.
Table 1. Marine Biotechnology Research Priorities to Address Key Societal Challenges

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<th>Target research area for development</th>
<th>Research priorities and objectives</th>
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| **Food**: Development of food products and ingredients of marine origin (algae, invertebrates, fish) with optimal nutritional properties for human health. | - Develop innovative methods based on -omics and systems biology for selective breeding of aquaculture species;  
- Develop biotechnological applications and methods to increase sustainability of aquaculture production, including alternative preventive and therapeutic measures to enhance environmental welfare, sustainable production technologies for feed supply, and zero-waste recirculation systems;  
- Integration of new, low environmental impact feed ingredients to improve quality of products and human health benefits. |
| **Energy**: Development and demonstration of viable renewable energy products and processes, notably through the use of marine algae | - Produce an inventory of microalgae resources for biofuel production to support optimisation of the most appropriate strains;  
- Improve knowledge of basic biological functions, tools for steering the metabolism and cultivation methods of marine microalgae to improve the photosynthetic efficiency, enhance lipid productivity and obtain microalgae with optimum characteristics for mass cultivation (mixed & mono cultures), biofuel production and biorefinery;  
- Develop efficient harvest, separation and purification processes for micro- and macro-algae. |
| **Health**: Development of novel drugs, treatments and health and personal care products | - Increase the focus on the basic research (taxonomy, systematics, physiology, molecular genetics and (chemical) ecology of marine species and organisms from unusual and extreme environments to increase |
chances of success in finding novel bioactives;
- Improve the technical aspects of the biodiscovery pipeline, including the separation of bioactives, bioassays that can accommodate diverse material from marine sources, dereplication strategies and structure determination methods and software;
- Overcome the supply problem to provide a sustainable source of novel pharmaceutical and healthcare products through scientific advances in the fields of aquaculture, microbial and tissue culture, chemical synthesis and biosynthetic engineering.

Environment:
Development of biotechnological approaches, mechanisms and applications to address key environmental issues

- Develop automated high-resolution biosensing technologies allowing in situ marine environmental monitoring to address coastal water quality, including prediction and detection of HABs and human health hazards;
- Develop cost-effective and non-toxic antifouling technologies combining novel antifouling compounds and surface engineering;
- Consolidate knowledge on DNA-based technologies for organism and population identification and support the development of commercial tools and platforms for routine analysis.

Industrial Products and Processes: Development of marine derived molecules exploitable by industry including enzymes, biopolymers and biomaterials.

- Develop enabling technologies for high throughput enzyme screening and for the expression of marine proteins and enzymes through dedicated hosts;
- Produce marine biopolymers as novel competitive commercial products in food, cosmetics and health.
2. Development of biotechnologies of products of a functional food, biologically active substances (BAS), additives (BAA) and compositions on the basis of marine biological resources. Biotechnologies on creation of ecologically safe foodstuff (for example, on the basis of smokeless smoking) or on production of the polycomponental items enriched BAS are known. Company "Biopolymers" created on the basis of the Partizanskiy himiko-pharmaceutical enterprise for introduction in production of scientific developments Pacific research fish-industry center, is engaged in BAA'S production from marine hydrobionts (Bocharov, 2010). However development of this market restrains various terminators (food stereotypes, absence of mechanisms of forming of consumer value and management of behavior of the consumer, etc.) in spite of the fact that in the world there is BAA'S boom of marine origin.

3. Bio-energetics - reception of power means and materials on the basis of not enough used marine resources. For example, production of bioethanol from seaweed and biodiesel from technical fish fat. A lot of research has already been done demonstrating that both microalgae and seaweeds are possible resources for the production of renewable fuels. A lot of tones of undesirable seaweeds are polluting the coasts and regularly need to be collected. Despite various trials, it appears that bioconversion of this huge quantity of seaweeds is technically feasible. In fact, microalgae can accumulate large quantities of hydrophobic compounds which can be converted into biodiesel and the production of biodiesel from microalgal triacylglycerides is the focus of much interest. We need to improve knowledge of basic biological functions, tools for steering the metabolism, and cultivation methods of marine microalgae to improve the photosynthetic efficiency, enhance lipid productivity and obtain microalgae with optimum characteristics for mass cultivation, biofuel production and biorefinery.

4. Akva- and Marine- culture - cultivation of valuable kinds of fishes, not fish objects of a craft (crustaceans) and seaweed. It is obvious that in the conditions of the tendencies which have appeared in the middle of the XX-th century of a stock depletion of water biological resources, a
competition aggravation in the world markets, and also at an increasing
demand for it under the influence of increase in population of the Earth the
increasing development receives reducings of a gain of production of the
foodstuffs akva - and marine- culture valuable kinds of fishes, crustaceans
and seaweed. China, India, Indonesia, Vietnam increase deliveries of fish
goods to the world market at the expense of aquaculture goods. Commercial
aquaculture in Primorski krai is faced with several important challenges at
the level of overall performance, reproduction, interactions with the
environment. Challenges include the physical constraints of temperature
and weather conditions, and light and pressure deeper in the water. In our
opinion, inertial development of fish culture in Primorski Region can be
stopped by introduction of the modern equipment for all engineering
procedures of cultivation of fish, and also use of high-grade fish forages of
high quality. The industrial aquaculture of especially valuable, currency
objects undermined by an illegal craft has a long production cycle from a
fish cub to a commodity output in some years that reduces appeal of this
activity to private enterprise structures and demands state participation.

5. The vital medical products on the basis of biotechnological
substances. The chemicals from the sea have numerous biomedical
applications including antibacterial, antifungal, antiviral and anti-
inflammatory uses. For comparison, now a share of the USA in world
volume of pharmaceutical biotechnology - 51 %, and Russia – 1 %.
Obviously, that the Russian researchers are facing with a lot of problems to
make pharmaceutical discovery from marine bioresources. The main
challenges are:

• Legal aspects: secure access to marine resources, property rights
  and intellectual property;

• Quality of marine resources: identification and variability;

• Technology: screening of active compounds and dereplication
  (preventing repeated rediscovery);
• Structural costs of drug discovery from natural products and especially marine products.

To solve these problems we need to create a workable legislation to bring functional products to the market quickly, safely and at low cost. We also need to implement further investigations to verify the actual health benefits of functional products of marine origin, to increase industry awareness of opportunities for drug discovery based on marine resources.

6. Biodegraded polymers (chitin, chitozan, sulphatic polysaccharides, collagen, etc.). Biopolymers of marine origin are currently being examined for a wide variety of applications. There is a particularly strong interest in the biomedical sphere, with developments such as pharmaceutical and medical polymers, bio-adhesives, wound dressings, dental biomaterials, tissue regeneration and 3D tissue culture scaffolds. Japanese and American specialists name chitin (and its derivative chitozan) substance of the XXI-st century.

In their opinion, goods world market on a basis chitozan will have in the near future global character with a turnover in 2 billion US dollars a year. Influence of chitin on increases of productivity of plants of agricultural crops that negative impact on functioning of agroecosystems, unlike pesticides and poisonous chemicals doesn't make is known. Meanwhile in Primorski Krai there are no enterprises for production chitozan, therefore guerrilla Biopolymers buy it in the next China. We need to produce marine biopolymers as novel competitive commercial products in food, cosmetics and health.

7. Biological safety in circulation seafood. Some of biological hazards may pose serious risks to health, such as Listeria monocytogenes in fishery products, biotoxins in live mollusks. For another thing, there is a growing interest in applying transgenic technologies in aquaculture. However, there is increasing consumer concern regarding genetically modified organisms (GMOs) and transgenic products. Therefore, the introduction of transgenic technology necessitates the need for production of sterile progeny and the development of better engineered aquaculture systems in order to minimise the risk of released transgenic stocks mixing
with wild populations, and this may, in turn, question the long-term benefits of such manipulations. For these reasons biotechnological applications should focus on disease control and production of healthy fish instead of boosting growth rates (European Commission, 2013).

8. A professional training in the field of sea biotechnology. There are many options and relevant activities possible. Organising specific marine biotech summer schools and training courses should be improved and increased because trained personnel in this field is lacking. In particular, promoting “work-place training” which combines academic training with industry would be interesting to consider as it allows compliance with the needs of industry. Organising specific network activities such as workshops on technical issues or technical staff exchanges may be another area of relevant work, for example in relation to sampling techniques, operation of biobanks, data gathering and management, support for marine biotech activities, etc. To promote marine biotechnological innovation, training of the next generation of scientists is critical. They must have more interdisciplinary expertise and use tools from various disciplines to address questions related to marine organisms and to solve problems posed by the marine environment. This statement is not specific to marine biotechnology; in fact the future of life sciences in the 21st century will depend upon the ability of scientists to develop interdisciplinary projects embracing skills and concepts from, for example, phylogeny, mathematics, chemistry, and the physical, engineering, computational and social sciences. The challenge for the development of the marine biotechnology sector is to ensure that undergraduate and graduate training programmes related to marine sciences include adequate training in biotechnology (Marine Biotechnology ERA-NET, 2010).

9. International cooperation under biotechnological projects. We need to mobilize a worldwide marine biotech research community, especially community of Asia-Pacific countries. The using professional public relations and communications services will assist with communication, dissemination and outreach products and efforts towards various targets based on a dedicated communication strategy. The
organization a series of topical workshops will bring together principal investigator of national research efforts in specific research areas, as well as private sector researchers or representatives.

METHODOLOGY AND DISCUSSIONS

Survey helped identify the main constraints the implementation of the above directions. They are:

- Lack of economic, political and social incentives of fisheries business to participate in the growing high-tech industries in all stages of the process.
- Insufficiency of effective demand for biotech products, both among business organizations, and the public, due to the lack of sufficient funding, the stereotypes in the diet.
- Contradictions between the process of the development of new knowledge in the field of marine biotechnology and their commercialization. Commercialization of new biotechnology products requires significant capital investment and a well-structured program to develop and to market.
- Shortage of capacity, lack of domestic biotechnological instrumentation.
- The complexity of circuits patenting of scientific research, unprotected ability copyright, intellectual property.
- The complexity of the certification process of the new product, the presence of control of clinical trials of biological products.

The study of national and international experience to support knowledge-based industries and technologies has allowed to identify the most important tools for the promotion of marine biotechnology in the Primorsky region (Table 2). In constructing the table, we proceeded from the fact that the creation, maintenance and development of biotechnological enterprise...
resource defined in equal measure the intensity of research activity of the innovation process in the region, the rate of diffusion of knowledge and technology and the company's ability to absorb new technologies. In addition we should not forget that for carrying out technological breakthrough in fishing activity requires substantial financial resources that are sufficient only to the state. Consequently, the government is involved in the implementation of innovative strategies not only as a regulator, but also a direct participant, using different forms of public-private cooperation. Search mechanism of interaction between science, government and business organizations are in different directions: prioritizing the development of marine biotechnology, the system of financing of scientific and technical sphere, the creation of innovation infrastructure, addressing staffing issues, the development of forms of cooperation and international cooperation.

Table 2. The Tools to Promote the Development of Marine Biotechnology in Primorski Region

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Tools</th>
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<tbody>
<tr>
<td>Creating a research infrastructure and training</td>
<td>Construction of marine biotechnology centers</td>
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<tr>
<td></td>
<td>Government contracts for research</td>
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<td></td>
<td>Training programs for bachelors, masters, doctors, professional development in the field of marine biotechnology</td>
</tr>
<tr>
<td></td>
<td>Training and advising managers</td>
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<td></td>
<td>Preferential hiring of graduates in business РХД</td>
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<td></td>
<td>Creation of special classes in schools</td>
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<tr>
<td>Promotion of industrial</td>
<td>Science and business cooperation in various</td>
</tr>
<tr>
<td>and academic cooperation</td>
<td>organizational forms, such as the creation of biotech clusters</td>
</tr>
<tr>
<td>--------------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Execution of works for business organizations on business planning, formation of competitive strategy, brand management, pricing and most importantly, the management of consumer behavior with regard to new products Marine Biotechnology</td>
</tr>
<tr>
<td></td>
<td>Participation of business structures in the creation of fishery biotechnology from &quot;zero&quot;</td>
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<table>
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<tr>
<th>Marine biotechnology commercialization and market entry</th>
<th>Creation of funds of commercial technologies</th>
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<tr>
<td></td>
<td>simplification of patenting</td>
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<tr>
<td></td>
<td>Government support in the design patents, quality standards (standards GMP, compliance with ISO - 9000) abroad</td>
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<td></td>
<td>State financial backing</td>
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<tr>
<th>Simplify access to capital</th>
<th>The compensation of the cost of production and implementation of the technology</th>
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<tr>
<td></td>
<td>Tax and customs exemptions, tax holidays</td>
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<tr>
<td></td>
<td>Direct subsidies venture organizations</td>
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<tr>
<td></td>
<td>Creating a leasing company to provide a comprehensive equipment</td>
</tr>
</tbody>
</table>

| Construction of office space for biotech companies | Creation of business incubators, technology parks, research parks, etc. |

It is obvious that growth of scales fish-industry businesses on the basis of marine biotechnologies will allow to solve following actual tasks of region:
• to provide the population with socially significant accessible foodstuff and biologically active compositions;

• it is rational to use traditional objects of fishery, stocks of seaweed, a waste of fish processing, not food seafood;

• to reduce harmful influence of productions by ecology;

• to create new work places in region;

• to receive and deliver on the world market new kinds of biofuel;

• to create new directions in business and trade;

• to leave on world level in the field of biotechnology of hydrobionts.

CONCLUSION

The economic and scientific potentials of marine environments remain insufficiently explored using the power that modern biotechnology provides. Moreover, their resources remain largely untapped by Primorski Krai industry. Extreme or specific environmental conditions (e.g. in temperature, pressure, salt content, pH, chemical composition) and the enormous biodiversity of these ecosystems offer multiple opportunities for bioprospecting, exploitation and use of microbes (e.g. cyanobacteria, fungi), plants (micro- and macro-algae) and animals (e.g. fish, molluscs, sponges) and their physiological performance and genes. This can lead to novel products or sources for industrial applications (e.g. bio-processing, biomass, bio-energy, bio-materials, specialties, pharmaceuticals, and aquaculture) and beyond.
There is now a strong momentum to drive progress marine biotechnology in Primorski Region. If we do not act now through a concerted effort by all the identified actors and stakeholders and through increasing its support with targeted funding and coordinated research, it will continue to lose ground on the leaders in this field such as the USA, Japan and China. This sphere could become the powerful lever of serious technological break of regional fish industry that will allow to solve many socially-economic problems and to meet critical societal challenges in the areas of food, environment, energy and health.

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Three Core Competences and Product Architecture Strategy: Case Studies of Indian Markets

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Received Sep. 25, 2014, Revised Sep. 29, 2014, Accepted Dec. 20, 2014

ABSTRACT

The aim of this article is to discuss the emerging challenges of global supply chains and their need for understanding the upstream and downstream collaborative Global network for global markets in the context of Emerging economies. This article explores the following research questions: (1) What particular success factors from the perspectives of core competences and product architecture. (2) In the context of Emerging economies, how are these business practices implemented? This article presents new linkage competence models that include three types of competencies plus the concept of product architecture. From these theoretical lenses, we analyze cases of Japanese global firms in India. Increasingly, Japanese firms sustain their global advantage by utilizing manufacturing capacities and market strategies in India. This paper deals with the strategic practices of Japanese manufacturers—particularly Toyota, Honda, and Denso. These firms not only use India as their production basis
for the global markets but also provide their own successful products that satisfy Indian customers. Case studies of Japanese global firms in the Indian market suggest that their market strategy is based on new supply chain management, which implements active localization practices in terms of sensing local market needs, developing Indian suppliers, and using context-driven marketing rather than bringing their domestic products with modest variations. These firms effectively use linkage competence that integrates both technology and customer competence. From the product architecture perspective, these firms also integrate their high technology competence (i.e., closed integral architecture for technological excellence) with the reality of uneven quality performance of local suppliers (i.e., open integral architecture for reasonable quality performance and market context accommodations).

**Keywords:** Core competences, Product Architecture, Emerging market, Japanese firms, Indian markets

**INTRODUCTION**

Shortly after the global financial crisis in 2009, the world economy was deteriorating on a global scale. Nevertheless, since 2010, it has recovered gradually. However, this recovery process varied distinctly according to the countries and regions. The International Monetary Fund (IMF) forecast of the world economy in April 2011 indicated that the growth rate of the world economy in 2010 increased by 5% over that of the previous year following a record−0.5% decrease in 2009. The gap of economic growth between the advanced and emerging economies further
widened since 2011, and the imbalance in growth in various forms is rising.

Emerging markets show fast economic growth and the speed of change among income groups is rapid. The accelerating growth rates of middle-income groups are transforming the economic structure from a pyramid shape of poor nations of the past to the diamond structure of advanced nations.

According to Japanese Economic Industry Bureau Statistics, the total number of households in Asia that have annual disposable income between $5,000 and $35,000 was 140 million in 1990, 220 million in 2000, and 880 million in 2008. This reflects the rapid growth of middle-income groups from China, India, and the Association of South East Asian Nations (ASEAN). From a global perspective, the large share of middle income groups is distributed in these areas. With rapid economic growth and increase in customer base, these economies hold amazing purchasing potential for new products and services.

Product strategy for these emerging economies requires linkage competence that combines technology competence for high functionality quality-performance-driven products and customer competence for high customer needs, lifestyle, and values-based products (Park and Hong, 2012). The obvious obstacle for advanced nations’ global firms to penetrate emerging markets such as BRICs is customer competence. In particular, many Japanese global firms have relatively high technology competence through their long product development experiences for customers from North America and Europe that expect high quality, functionality, and safety of their products.

In contrast, these global firms experience patterns of business that are new. Comprehending different customer needs and translating them into successful products is the key for strategic positioning in these emerging markets. To enhance
customer competence in the emerging markets, these global firms need to develop customer experts with sensing capability and who can utilize information technology (IT) infrastructure. For business-to-consumer (B-to-C) product markets, it is important to assess what particular types of products customers prefer to purchase through direct customer visits and marketing research in retail stores. The size of demand in B-to-C consumer markets is directly proportional to the increase of personal incomes. The growth rate of business-to-business (B-to-B) markets (i.e., intermediate industrial goods) corresponds to keeping up with the economic growth of emerging economies, while the purchasing pattern differs by regions.

For meaningful examination of these research questions, we employ case studies of Japanese firms in the context of emerging markets. Firms that participate in the case studies are carefully chosen to study the framework to show relationship between core competences and product architecture strategy. Case findings suggest that successful global firms build linkage competences to satisfy customer needs in the emerging market.

RESEARCH MODEL

Three Types of Core Competences and Global Expansion Strategy

In 2000, Malcolm Gladwell introduced Tipping Point: How Little Things Can Make a Big Difference. This book became one of the bestselling books for years. This book illustrates the idea of linkage competence in the daily context of American life. Malcolm Gladwell (2000) focuses on three types of people that play prominent roles in making particular ideas or concepts to spread like social epidemics. The first type is connector. The concept of connector refers to those who have extraordinary levels of social
contacts. For example, the size of social circles of average people among 1,000 in a random sample is about 35 people or so. In any group, at least one person has 130 to 150 (i.e., five to six times the average). These connectors play very important roles in spreading new ideas. The second type is mavens which are somewhat different from connectors. They are information experts. When superstores offer “special buys,” most people do not remember the individual prices of the products on sale. But 0.1% of people remembers the pricing details and spreads the news to others. Thus, the databases stored in the minds of these mavens make a big impact on linkage competence. The third type is salespersons. They exercise a huge influence on the customers who finally decide to purchase particular products through their timely and credible suggestions. These three types of people take quite active roles in social network distribution. The above-mentioned influential people are what in Rogers (1983) are referred to as “2.5% innovators” and “13.5% early adopters.”

This paper examines the building process of linkage competence from the standpoint of global market expansion based on extensive field studies (Voss et al., 2002). Our special focus is to examine linkages between various choices of cross-functional competences and their impact on competitive performance (Brown, 2013). In other words, this paper discusses how global firms successfully build their linkage competence in the emerging markets. The determining factor of any firm’s competitive advantage is its unique resources or advantageous position (Penrose, 1959; Wenerfelt, 1984; Rumelt, 1984; Hamel and Prahalad, 1990; March, 1991; Leonard-Barton, 1992; Morone, 1993; Henderson, 1993; Dougherty and Heller, 1994; Daugherty, 1995; Helfat and Raubitschek, 2000; Danneels, 2002; Barney, 2002; Rosenzweig et al., 2003; Park, 2009; Park and Hong, 2012). In a relatively stable business environment, it is common for
firms to utilize their core competence for a long period once it had been successfully built over the years. However, in a turbulent market environment the core competence of the past may turn out to be the reason for business failures.

After the 2008 global financial shock, the demise of Japanese electronics firms illustrate this point (Nonaka and Takeuchi, 1995; Fujimoto et al., 2005; Fujimoto, 2006). As firms concentrate on incremental innovation, architectural knowledge embedded in work routines and regular work flows rarely change. Consequently, the internal innovation leaders will depend on organizationally filtered information, outdating their perception of organizational architecture and absorptive knowledge. These firms can no longer face the challenges of the disruptive innovation of rival firms. In this context, researchers in the 1990s presented the dynamic capability theory (Teece et al., 1990; Utterback and Suarez, 1993; Teece and Pisano, 1994; Henderson and Cockburn, 1994; Teece et al., 1997; Teece, 1986; Miller and Morris, 1999; Teece, 2007; Quinn and Dalton, 2009). Firms lose their competitive advantage once their organizational governance is unable to create, store, and explore knowledge assets through their routine work processes. In this sense, dynamic capabilities are defined as “the systematic organic effort to capture the new innovation opportunities by connecting to the external network and to translate into organizational core capability that reconfigures and protects their knowledge assets for sustainable competitive advantage” (Teece, 1986; Snow et al., 1992; Nonaka and Takeuchi, 1995). Thus, the crucial elements of dynamic capability are organizational sensing of external environment, exploration of business opportunities, and stretch and leverage of innovative knowledge assets (Hamel & Prahalad, 1994; Park and Hong, 2012).
In this paper, such dynamic capability is referred to as three competences which are customer competence associated with external environment, resource securing for enhancing technology competence, and linkage competence that combines external and internal resources (Park and Hong, 2012).

First, the strengths of Japanese firms are in their technology competence that develops products with high functionality and quality. This derives from product development capability, patent rights, multi-skilled human resources, product design, and manufacturing capability embedded in organizational system and work processes. The indicators of technology competence are productivity, production lead time, time to market, number of new product projects, product integrity, and design quality (Fujimoto, 2001). Technical experts with years of experience in manufacturing floors (e.g., heavyweight project managers of Toyota Company) can recognize the level of technology competence with their intuition and careful observation of manufacturing processes (Fujimoto, 1997).

Second, in the emerging new markets relative weakness of Japanese firms lies in customer competence, which is essential to inspire customers through aggressive marketing and promotional efforts. This involves innovative methods of communicating the unique value of their products, which force them to adopt new lifestyle patterns. Customer competence includes comprehensive measures such as customer satisfaction ratings, repeating purchase rates, the number of new customers, market share, customer loyalty, and customer’s willingness to pay. Expert managers with years of experience in the areas of customer service would be able to estimate the extent of customer competence.

Third, the capability to transform an idea into a tangible substance (i.e., linkage competence) is to integrate product
concept into tangible products (i.e., linking customer competence to technology competence). However, many Japanese firms are not familiar with this “linkage competence” concept. Japanese firms assume that their weak customer competence is the main reason for their relatively weak position in the global markets. Thus, many firms reinforce their marketing efforts and yet they do not necessarily understand the critical role of linkage competence for their marketing success. Linkage competence is realized as firms attain adequate market sensing capability, develop customer-trend sensitive managers, implement product architecture, and achieve overall product-process integrity in diverse manufacturing industries (Park et al., 2012a, 2012b).

Core Competence and Product Architecture Strategy for emerging markets

In this paper, we introduce the successful examples of Japanese global firms in India. For this purpose, we present the relationship between three types of competence and product architecture. Outstanding global firms are keenly aware of changing requirements of their organizational environment (Rosenzweig, et al., 1991). As we mentioned, the winning product strategy of global firms for these emerging economies includes technology competence (i.e., utilizing technological capability to make good products), customer competence (i.e., understanding lifestyles of customers and capturing the hearts of customers), and linkage competence (i.e., integration of technology and customer competence) (Park and Hong, 2012). In other words, market success of global firms depends on their supply chain responsiveness in terms of effective deployment of their technology competence to fit the unique needs of the customers in emerging economies (Roh et al., 2011, 2014). This paper defines
the capability of firms to detect the needs of customers in India and translate them into the right products as sensing competence (Park, 2011a). Emerging markets also show two patterns: (1) the impact of direct income growth that impacts the rapid demand growth in business-to-customer (B to C) markets, and (2) industrial or intermediate goods in business-to-business (B to B) markets based on the macroeconomic growth. Interestingly, customer competence is what global firms from advanced nations find most challenging to master for their winning performance in the emerging markets. Japanese firms discussed in this paper possess high levels of technology competence (i.e., product quality and safety performance capability) with their long experiences in advanced countries. Yet, their weakness in customer competence of emerging economies has dismantled their ability to penetrate new markets. Emerging economies have unique market conditions that greatly deviate from those of advanced markets. Therefore, the crucial competitive advantage lies in their linkage competence that integrates technological and customer competence in these emerging markets.

Meanwhile, a critical issue of global firms is how to effectively respond to the turbulent dynamic global business environment—particularly to the emerging markets. Product architecture is a useful concept to analyze rapidly changing markets. Firms focusing on finished products tend to use closed integral architecture while component product manufacturers offering the commodity nature of products usually adopt an open modular architecture (Christensen et al., 2002; Park and Hong, 2012). The global business environment is rapidly changing from a closed integral to an open modular environment. Thus, firms search for linkage competence, which provides speed (Park and Hong, 2012).
Product architecture is the basis of product design. In general, a modular type is for combination of separate independent parts while an integral type is for integration of complex interdependent elements (Henderson and Clark, 1990; Ulrich, 1995; Fine, 1998; Baldwin and Clark, 2000; Fujimoto, 2001). Modular types show one-to-one relationship between functionality and structure. Therefore, each module requires independent design of each component. In contrast, integral types involve multi-to-multi relationships among interdependent parts. Any change in one part of the design influences other aspects and thus complex system design is a necessity. Common product structures of manufacturing products are hierarchical. Therefore, even for many modular products the foundational structure is integral architecture (Clark, 1985). For example, a LCD TV has integral elements in the upstream manufacturing process/front-end design process, and the downstream manufacturing assembly process includes mostly modular types (Park et al., 2008; Park, 2010).

Here, two sets of parameters are the following: (1) modular/integral (i.e., types of product architecture), and (2) open/closed (i.e., relationship extent between firms). “Open” refers to the technological specificity that defines the extent of how a firm’s modules are openly related to those of other firms to make a particular product. In contrast, “closed” is about the incompatibility of one’s modules (e.g., pure and unique components) with other firm’s modules. An “open” structure allows for communalization and standardization among modules and thus a linkage mechanism among interfaces (i.e., common linkage between component parts and shared connectivity protocols for information flows). On the other hand, a “closed” structure does not allow interface design rules among modules
(i.e., unique modules of each firm are unrelated to those of other firms).

Thus, a $2 \times 2$ matrix shows four types of product architecture. An “open-modular” product indicates a modular architecture with open interface structure. Open-modular products allow combinative design of component parts. Firms are able to offer products with a high level of functionality and value potential through a smooth combination of diverse quality component parts from multiple firms (Fine, 1998; Fujimoto, 2001). Thus, maximum functionality of products is determined by the functionality potential of component parts.

In contrast, “closed-integral” products define unlimited functionality potential through complex internal integration mechanisms. The realistic functionality maximum is determined by cost and cycle time.

March (1991) emphasized dynamics of firms as learning organization and used the term of exploration and exploitation. According to March (1991), exploration refers to the elements of search, variation, risk taking, experimentation, play, flexibility, discovery, and innovation. Exploitation is about refinement, choice, production, efficiency, selection, implementation, and exactation. The idea of core competence dynamics can be further expanded in view of the concept of exploration and exploitation of competences (Park and Hong, 2014). Figure 1 shows the interrelationships among customer competence, technology competence, and linkage competence in terms of product architecture. Technology competence allows firms to enhance closed-integral product architecture, not necessarily followed by product attractiveness. On the other hand, customer competence may fit open-modular product architecture, while technology level might not be enhanced simultaneously. Thus, we hypothesize that product architecture relates to different core competences.
CASE STUDY

This paper notes how Japanese global firms recognize such strategic cost constraints in the emerging markets. Successful Japanese firms in the emerging markets adopt an open integral product architectural strategy (as opposed to a closed integral architectural strategy) while utilizing linkage competence. These firms determine customer needs of emerging economies and raise the level of localization (i.e., use local suppliers for majority of component parts) and yet stick to integral product architecture to ensure product quality and sustainability goals. In the paper, based on the theoretical framework of the core competence model and product architecture strategy, we discuss further in depth successful business strategy of Japanese global firms in India.
Strategy of Toyota India

The key for a successful market strategy in emerging markets is to integrate technology competence into sensing and translating local market needs through customer competence. For this purpose, Japanese global firms move away from the previous focus on product development based on their technology competence and replication of their domestic market driven product development models. First, we discuss Toyota’s strategy in the Indian market.

Toyota Kirloskar Motor (TKM) and Toyota

In 1997 Toyota established Toyota Kirloskar Motor (TKM), a joint venture with an Indian firm, and since then it has marketed several product lines including Innova and Corolla Altis. Among them, the most successful model was the Innova and Etios model. Innova is the Indian version of Toyota’s global strategic brand called IMV (innovative multipurpose vehicle). Its production was the fourth in Southeast Asia next to Thailand, Indonesia, and the Philippines. IMV was truly an epoch-making project in that all the main processes (e.g., component parts sourcing, production, and logistics) are simultaneously implemented in ten countries. Then the products are supplied to 140 countries. Toyota Kirloskar Auto Parts (TKAP), as a part of IMV, produces major engine parts (e.g., transmission) in India. All the auto parts that TKAP produces are exported all over the world to those that use IMV product lines. The TKAP business unit is quite strategic for Toyota. The president of TKAP explained, “it recognized the strengths of India’s auto-manufacturing potential for global market” (Shimada, 2005). Certainly, auto manufacturing in India has several advantages.
First, it has solid makers for manufacturing facilities. India has a basic manufacturing infrastructure capacity which is rather rare among developing nations. India is more advantageous than China in this respect. Such technological capability is based on its long history of auto manufacturing. Second, India’s large domestic market is steadily growing. The market size advantage allows many firms to implement economies of a large scale of production, and their global competitiveness is also formidable. For example, over 380 million Indians (72 million households) have an annual household income of over $10,000. Third, India has caught up with the global trend of FTAs among many nations. In the automobile industry, most nations require firms to pursue local sourcing options and international comparative advantage (i.e., labor-intensive nations focus on their labor cost advantage while technology/capital-intensive nations seek their technological advantages) is not well practiced. Since India has established FTA with other nations, the automobile industry shows an international comparative advantage just like the electronics industry. Fourth, India has abundance of skilled human resources. Indians are fluent in English and quick to learn Japanese. Since India is a nation where diverse languages are spoken, Indians have a greater ability to reasonably guess what others are saying in foreign languages. TKM, with the support of TKAP in the previous contexts, was able to succeed in the product development of car models such as Inova and Etios that fit the particular demands of Indian consumers.

**Linkage competence for development of Etios Sedan**

Toyota’s product development strategy for the Indian market went far beyond its development patterns for the Japanese domestic market. Etios Sedan (that has been popular
among Indian consumers) illustrates this point. Etios is Toyota’s first successful emerging market-driven product. The project leaders started from a zero base (i.e., start the entire process from the beginning for the Indian market requirements) including its platform design and manufacturing processes. Etios is different from the other Toyota models that are marketed in Japan, the United States, and Europe. For example, Japanese passengers do not want direct exposure to the cold air from a car’s air conditioner. Yet, Indians love direct access to cold air in the car. Recognizing Indian consumers’ preference for auto air-conditioner functionality, Toyota installed the air-conditioning unit in Etios in the way Indians wanted. Toyota benchmarked the new product development practices of Korean household electronics firms and Hyundai-Kia that successfully defended their market leadership in the Indian market. Toyota also accommodated additional space for Indians who like to put their “Ganesha” (Hindu religious statues) inside their automobiles. Many Indians also walk on barefoot so Toyota provided special soft covers in the guide rail of the front seat. In view of much of the unpaved Indian road system, Toyota installed an additional cover for the lower engine parts area. This enhances the performance of the anti-dust shock absorber, which in turn benefits its longevity in dusty regions.

All these features indicate Toyota’s commitment for the Indian market and reflect the practical needs of Indian customers in their product design and manufacturing processes. Three additional aspects of Etios’ development strategy are noted for further discussion here (Park and Amano, 2011).

First, a new product development team visited India numerous times and maintained collaborative relationships with Indian local R&D teams. The Japanese chief engineer who planned and executed the Etios model project visited India several times and observed the riding habits and demand
patterns of Indian customers. He also toured many regions of India—a total of 200,000 km—by car. He insisted on the field adaptation test of the Etios prototype in India to be executed at least four times (instead of one time in Japan). Since Toyota established Toyota Kirloskar Motor (TKM) in 1997, the key competitive challenge has been to successfully sell its models for market leadership in India. Toyota’s senior management leadership accepted the fact that their previous development platform focusing on the advanced market (e.g., Japan, North America, and Europe) did not fit customer needs in emerging markets like India. For translating the local needs in product design and manufacturing, it became obvious that Japanese engineers alone could not adequately reflect all local customer requirements. Toyota very closely collaborated with local Indian engineers of TKM. The Etios model was born in the course of these Indian engineers working together with Japanese counterparts.

Second, a crucial element that the emerging market needs is price competitiveness. This requires localization of component parts and development of an Indian suppliers’ network. In the case of the Etios model in India, the goal of drastic cost reduction was achieved through bold product design. Take steel plates as an example. According to the Japanese chief engineer responsible for the Etios development project, most of component parts for the Etios model were sourced from Indian suppliers. India’s Tata Steel Company supplied steel plates. Unlike Japanese high-quality steel plates, Tata steel plates’ inconsistent quality performance remained a huge challenge.

However, Toyota devised a product design that covered this particular quality challenge. Since the highest quality level of steel plates that Tata could offer was 440 MPa (MegaPascal; 1 MPa = 1 N/mm), which was not the high-grade level of 500 to
1000 MPa, the design team came up with an option that substantially strengthened product performance with 440 MPa steel plates. Toyota has achieved about 70% of localization in India. By 2011, its goal is to increase up to 90% including engine and transmission systems as well.

Third, Toyota’s innovative product development strategy accomplished cost reduction goals and vast performance improvements that satisfied Indian customer requirements through various technological functionality enhancements such as standing oil jet technology for piston cooling, forged crankshaft and connecting rod for durability, EPS (electric power steering) system for fuel efficiency, suspension system for comfortable ride, and shock absorber for anti-dust performance. All these comprehensive product development efforts indicate how Toyota achieved its integral product architecture in the Indian market contexts (e.g., India’s high temperature, bumps in the uneven road surface and dusty regions, and high gasoline costs) utilizing open components.

Strategy of Honda India

Japanese Makers Lead in Indian Motorcycle Market

There has been a substantial increase in motorcycle demand in major cities with a relatively reliable road system such as New Delhi, Mumbai, and Calcutta. The growing Indian middle class prefers to use motorcycles for their transportation means because passenger cars are still relatively expensive, while motorcycles are affordable for their income level. In response to this present condition, global motorcycle makers have poured their newer models into the Indian market, and India’s financial loan system supported such surging consumer appetites (Kadokura, 2006).
According to data published by the Society of India Automobile Manufacturers (SIAM), the sales volume of motorcycles in India has maintained two-digit growth rates every year. The market growth of Japanese motor bicycle manufacturers also shows steady performance in the ASEAN market with their competitive prices and high product quality reputation. The global ranking of India’s motorcycle market is next to that of China. Nevertheless, by international standards, the diffusion rate in India is still fairly low. As of 2003, out of 1,000 people, the Japanese rate is 106.3 and India shows 35.4 (Kadokura, 2006). India’s motorcycle market is huge and its growth potential is high. A simulation result based on the Japanese diffusion growth rate up during the climax years suggests that India will show similar patterns of growth in 2015, 98.2 per 1,000 and by 2020, 131.7 per 1,000. The estimated forecast of its demand in the Indian market is 15,663,000 in 2015 and 18,846,000 in 2020. The annual growth rate in the period of 2005 to 2020 is expected to be 10.5% (2005 to 2010), 7.7% (2010 to 2015), but only 3.9% (2015 to 2020) with the rapid passenger car demand in that period.

In the Indian motorcycle market, ten firms (including global rivals from Japan, the United States, and Europe) maintain both manufacturing and market networks. The Hero Honda has the largest market share. The Hero Honda was established in 1984 by Honda (Japan) and Hero (India) with each holding 26% of ownership. With the recent termination of such a joint venture, both Honda and Hero hereafter consider separate manufacturing and marketing strategies in India. In 2004 both firms extended technological cooperation for an additional 10 years and thus by the end of 2013 the collaboration relationship continued.
Linkage competence for development of PCX 150

Honda is excellent with its technology competence and linkage competence that translate local market needs in its products. Based on such a strategy, Honda maintains an absolute advantage in BRICs markets (i.e., China, Brazil, and India) and other ASEAN markets (e.g., Thailand, Vietnam).

First, Honda exerts strategic efforts in reinterpreting its technology competence in relation to customer competence. Such initiatives started in China and now are extended to Thailand, Vietnam, and India. For example, Honda’s products sold in Thailand reflect its unique contexts—especially the prices of motorcycles, which drop exceedingly every year. In emerging markets, the key for market advantage is in speed and cost competitiveness. Thus, the long-term strategy of emerging markets must consider total low cost strategy. More and more Chinese and Indian indigenous firms are introducing their inexpensive models aggressively in the markets. In India, Hero Honda’s market share was up to 60% but Chinese motorcycle rivals steadily challenge Honda’s competitive position. In response to such competitive threats, Honda identifies national market needs and translates them into its products that appeal to customers of each region. In principle, Honda conducts new product design and development by individual country. In practice, Honda defines maximum common denominators based on market research of every country and determines the global model platform first. Low-cost competitiveness for product development and manufacturing is crucial in this vital process.

This is the firm’s linkage competence that uses low-cost component parts and materials for all their products. Honda’s competitive advantage in emerging markets such as China and India is in its capability to utilize sourcing network infrastructure
to achieve the best possible choices for multiple customer requirements in terms of quality, cost, and delivery. In other words, Honda integrates its brand reputation, advanced technological capability (environment/safety/efficiency), and economies of scale production capability to sustain its superior market position. For example, Honda developed PCX150 as a global model by applying such a network development infrastructure using the sourcing/manufacturing infrastructure of emerging countries and the product concept of advanced nations. It offers the fuel economy of the most frugal scooters, but is big and powerful enough to carry a passenger and ride on the highway.

Honda India rapidly grew with a joint venture with Hero, an Indian firm. Its market share in India exceeds 60%. The primary reason for the market leadership is cost competitiveness based on a high percentage of local sourcing of component parts through India’s indigenous firm Hero and other Indian suppliers. The Japanese engineering design team provides product structure and detailed design blueprints, and all the component parts are secured by local Indian suppliers. Product design of PCX 150 in India accommodates a strong rear structure, which allows three or four people to ride a motorcycle. Thus, PCX 150 is an example of how Honda combines its strong engine performance, local sourcing, and India customer-specific design structure. Honda India separated from Hero, an Indian partne. This will require continuous prominent local sourcing as well as product development strategy that satisfy changing customer requirements in India.
Strategy of Denso India

Denso India

Firms that target emerging markets are not only the manufacturers of finished goods (e.g., Toyota, Honda, Seiko Epson, and Makino) but also component parts suppliers. Denso is a leading supplier of advanced automotive technology, systems, and components for all the world’s major automakers. With approximately 126,000 employees in more than 35 countries, its global turnover places it amongst some of the largest companies in the world. Denso started its operation in India from 1984 onwards and since then has been continuously supplying superior quality products to its customers. With current workforce of over 3000 associates in India, Denso caters to virtually all the major automakers in India.

Linkage competence for development of wiper systems for Nano

Denso India also recognizes the importance of sensing customer needs in India—particularly price competitiveness. Denso’s innovative approach to designing new products for emerging markets is not by using the previous design of existing products. Instead, it starts from a zero base and defines essential minimum functionality and performance requirements and then devises products that would sustain Denso’s brand in terms of functionality, performance, and value added. Denso’s cost target for emerging markets is generally half of the price of its past products. Since Denso’s products are mostly automotive component parts, its customers are primarily original equipment manufacturers (OEMs). To secure customers that market their finished products in emerging markets such as India, China, and Brazil, Denso’s strategic priority is to sustain superior cost
competitiveness and a high-quality workforce that can sense local customer needs.

Denso India became the supplier of wiper systems for Nano which is a strategic product vehicle for Tata, through developing local Indian engineering talents. For many years Denso’s primary customer base has been Japanese makers such as Maruti Suzuki, Yamaha, Honda, Suzuki, and Toyota. From 2006, Denso participated in Nano product development processes and became the local supplier of its wiper system. It was through the Indian engineers who had been working at Denso for more than 10 years that Denso could develop a strategic partnership with Tata. Under the leadership of an Indian chief engineer, Denso was able to reduce the total cost by 30% to 40% for the ideal product considering the local customer needs. At the same time, Denso’s customer relationship with Tata by an Indian chief engineer was also quite smooth. Denso India has instituted the training program that selects two Indian engineers who receive one year of intensive training in Japan. As of 2011, more than 30 Indian engineers have completed their education and training in Japan. From 2011, Denso has also constructed testing labs for India’s small and medium suppliers. In this way, Denso has developed an extended linkage competence that includes both its own R&D facilities for regular customers of Japanese and Indian OEMs and additional testing labs to serve the needs of small and medium Indian suppliers.

Comparison of Japanese firms

Increasingly, Japanese component parts suppliers sustain their global advantage by utilizing manufacturing capacities and market strategies in India. This paper deals with the strategic practices of Japanese manufacturers—particularly Toyota, Honda, and Denso. These firms not only base their production in India for
the global markets, but also provide their own successful products that satisfy Indian customers. Case studies of Japanese global firms in the Indian market suggest that their market strategy is based on new supply chain management, which implements active localization practices in terms of sensing local market needs, developing Indian suppliers, and using context-driven marketing rather than bringing their domestic products with modest variations.

These firms effectively use linkage competence that integrates both technology and customer competence. From the product architecture perspective, these firms also integrate their high technology competence (i.e., closed integral architecture for technological excellence) with the existing circumstance of uneven quality performance of local suppliers (i.e., open integral architecture for reasonable quality performance and market context accommodations).

Table 1. Comparison of case firms

<table>
<thead>
<tr>
<th></th>
<th>Toyota</th>
<th>Honda</th>
<th>Denso</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product</strong></td>
<td>Automobile</td>
<td>Motorcycle</td>
<td>Wiper</td>
</tr>
<tr>
<td><strong>Original competence in Japan</strong></td>
<td>Technology</td>
<td>Technology</td>
<td>Technology</td>
</tr>
<tr>
<td><strong>Original architecture in Japan</strong></td>
<td>Closed-Integral</td>
<td>Closed-Integral</td>
<td>Closed-Integral</td>
</tr>
<tr>
<td><strong>Competence strategy in India</strong></td>
<td>Linkage (strengthening customer competence)</td>
<td>Linkage (strengthening customer competence)</td>
<td>Linkage (strengthening customer competence)</td>
</tr>
<tr>
<td><strong>Architecture strategy in India</strong></td>
<td>Open-Integral</td>
<td>Open-Integral</td>
<td>Open-Integral</td>
</tr>
</tbody>
</table>
DISCUSSION AND CONCLUSION

Based on the product architecture perspective, this paper has clarified the organizational processes of Japanese firms in India. Here, it is meaningful to compare Japanese firms with Korean global firms in terms of emerging market strategy. The localization strategy of successful Korean firms in China, Brazil, and India suggests several common factors. Starting from the mid-1990s, they accelerated the localization implementation efforts in the emerging economies. Their initial focus was to meet the market demand of India, China, and Brazil. From the latter 1990s, the scope of localization expanded to support the increasing requirement of global market sales. Large-scale investment, decisive and timely decision making by the owner-management and innovative utilization of information technology (IT) infrastructure are their key factors to success.

While Japanese counterparts mostly focused on North American and European markets by the mid-1990s, Korean firms kept their strategic priority in India, Brazil, and China and rapidly deployed their resources to target these growing markets. Japanese firms were less confident of the emerging markets opportunities because of India’s volatile political circumstances. In the 2000s, as India were about to take off with their rapid economic growth, Japanese firms were less aggressive with resource constraints from Japanese prolonged domestic recessions. In contrast, Korean firms, immediately after the Asian Financial Crisis, adopted aggressive investment policy directions in India.

However, at the headquarters’ level, no global firms had sufficient capital to meet the needs of all the global markets including the emerging economies. Thus, effective investment decisions for market growth in emerging economies require
careful consideration of timing, changing political contexts, and economic policies. Figure 2 shows how Japanese and Korean global firms apply their product strategy from core competence and product architecture perspectives.

Figure 2. A Model of Successful Japanese Global Firms in Indian Markets

In general, Japanese firms implement an open-integral strategy based on their strong integral architecture development capability and cost-competitive performance of local component parts suppliers. Korean global firms mostly adopt open-modular architecture with their speedy and bold decision making. Their products, based on open-modular architecture, have very short product life cycles (PLC). They are extremely market responsive by applying short PLC (i.e., introduction-growth-maturity-decline). Furthermore, they implement an effective supply chain strategy that combines design differentiation, functional
differentiation by market segments, timely market offerings of
new products, and integration of production and marketing.

In the coming years, as more global firms turn their
attention to Indian markets, it is all the more interesting to see
how successful global firms in India implement integration of
their core competences and product architecture.

ACKNOWLEDGEMENTS

This article was supported by Japan Society for the Promotion of
Science (JSPS) KAKENHI (Grant-in-Aid for Scientific Research
(C) 24530493).

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Factors Influencing e-Commerce Adoption in Uzbekistan SMEs

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Received Oct. 10, 2014, Revised Nov. 19, 2014, Accepted Dec. 20, 2014

ABSTRACT

This paper investigates the factors influencing e-Commerce adoption by SMEs in Uzbekistan. The objective of this study consists of consolidating the factors and determining their level of influence on e-Commerce adoption. We categorized these factors in three enterprise contexts—technological, organizational, and environmental contexts according to previous studies. A set of 9 factors was presented through a survey and sent to SMEs in Uzbekistan. We then asked respondents to rate the effect of these factors on their e-Commerce adoption decisions. The research model suggested enterprise’s context factors that have been found to be influential in previous researches in the e-Commerce
adoption. The research results showed that some of these three context factors had a positive relationship with perceived benefits of e-Commerce adoption. Future studies should focus on a specific industry that succeeded in adopting the e-Commerce or e-Business, to acquire useful success factors in that particular industry. Also, this study will be helpful as a guideline to the countries considering to adopt e-Commerce in their SMEs.

**Keywords:** e-Commerce adoption, Context factors, Uzbekistan SMEs

**INTRODUCTION**

Many countries understand the enormous advantages brought about by the accelerated development and proliferation of information and communication technologies (ICT). It would be rather naive to suggest that the Internet and ICT technologies are not having a major impact upon the ways in which we work and live today. The last two decades have observed an explosive growth in the use of Internet technologies, especially the World Wide Web, for business purpose. Most of the organizations in the developing countries now conduct business through the Internet. Business organizations, regardless of their size, have applied Internet technological tools in a wide range of their business activities including advertising, online delivery of goods and services(Chung,2008; Fillion, 2008; Kim, 2007).

Both public and private sector organizations now invest heavily on digitization in the hope of getting a competitive edge in the market. The internet, with its rapid growth, has created a promising future for developing transactions from using traditional methods to the generation of e-Commerce(AI-Dmour, 2012). One of the most profound changes currently transpiring in
the world of business is the introduction of e-Commerce. It provides unparalleled opportunities for companies to expand worldwide by increasing market share and reducing costs. Also, the growth in demand for digital signature registration suggests a growth in the number of online transactions.

The emergence of the Internet has allowed SMEs to compete effectively and efficiently in both domestic and international market. SMEs’ ability to successfully adopt and utilize the Internet and e-Commerce maintains their stability and future survival. The SME sector plays a significant role in its contribution to the national economy in terms of the wealth created and the number of people employed (Abdel, 2012). SMEs in Uzbekistan represent the greatest share of the productive units of the country’s economy and the current national policy addresses means of further developing the capacities. Uzbekistan has a rich resource base, both in terms of natural resources and human resources, to aid in SME development.

While e-Commerce in developing countries takes an advantage of a well-developed infrastructure and regulatory environment, developing countries have to discover new ways to overcome many challenges found in the environment. This research intends to perform an empirical study on the factors influencing e-Commerce adoption by SMEs in Uzbekistan. The research focuses on developing the research model for the development of e-Commerce adoption based on the previous study. It also investigates and determines the factors influencing on the perceived benefits of e-Commerce adoption by SMEs in Uzbekistan. We used SPSS 18.0 program for the statistical analysis of data, using a sample of 165 questionnaire respondents.
LITERATURE REVIEW

Conceptual Background

Conceptual Background of e-Commerce

e-Commerce applications first started in the early 1970s. e-Commerce is defined as the conduct of commerce in goods and services, with the assistance of telecommunications and telecommunications-based tools (Roger, 2000). It simply means the ability to buy or sell goods and services online. Primary methods of online business include EDI, e-mail, fax, Electronic Fund Transfer (EFT), and Internet. e-Commerce has also been defined as “sharing of business information, maintaining business relationships, and conducting business transactions by means of telecommunications and networks” (Zwass, 1996).

By considering the research area, we give both a narrow and broad definition. In a narrow view, e-Commerce is online shopping via internet, but a broader view sees it as more than just buying and selling goods; it includes various processes. This study focused mainly on the narrow definition.

Conceptual Background of SMEs

SMEs consist of a very heterogeneous group. The business owners may embody different levels of skills, capital, sophistication and growth orientation. Some countries have different definitions for SMEs in the manufacturing and services sector and may exempt firms from specialized industries or from firms that have shareholdings by parent companies. The importance of SMEs to the national economy has been shown in the Asia-Pacific region countries such as Taiwan, Thailand, Singapore and so on.

Likewise, in Uzbekistan, SMEs make up 90% of the total enterprises; approximately 460,000 enterprises and SMEs employ
74.8% of the total employment (Kamilla, 2013). According to the current Uzbek legislation, small and medium business entities fall into the following categories: an individual entrepreneur, micro-firm, small and medium sized enterprises. Structural transformations taking place in the economy of Uzbekistan deserve special attention. In 2000, the share of industrial production, small business, and private enterprises comprised a total of 14.2% of the total GDP about 31% accordingly; in 2012, these indicators reached 24.5% and 54.6%, respectively.

**e-Commerce of SMEs in Uzbekistan**

At the beginning of the implementation of ICT in Uzbekistan, experts suggested creating necessary conditions for efficient performance of Internet in the sphere of economy. Mainly, they mentioned creating a legislative base for conducting business, creating appropriate financial conditions for making business transactions, and finally altering the readiness of entrepreneurs to conduct their business via Internet. The current legislation creates a chance to make an ideal environment for e-Commerce development in Uzbekistan. With the effort, the online trading volume in Uzbekistan has been on the increasing trend since 2007 (Basil & Sherah, 2008; Olimjon, 2007).

**Theoretical Background**

There are many theories used in IS researches. We are interested in theories about technology adoption. The most used theories are the technology acceptance model (TAM), theory of planned behaviour (TPB), unified theory of acceptance and use of technology (UTAUT), and Tornatzky and Fleischer’s (TOE) framework (Davis, 1989; Rogers, 1995). We will discuss about the DOI and the TOE models below:
**DOI Model**

DOI theory sees innovations as a form of communication through certain channels over time and within a particular social system. Breaking this distribution into segments leads to the following five categories of individual innovativeness: Innovators, early adopters, early majority, late majority, and laggards. See Figure 1 (Rogers, 1995).

![Figure 1 Diffusion of Innovations](image)

**TOE Model**

The TOE framework identifies three aspects of an enterprise's context that influence the process by which it adopts and implements a technological innovation: technological, organizational, and environmental context by Figure 2. (a) Technological context describes both the internal and external
technologies relevant to the firm. (b) Organizational context refers to descriptive measures about the organization. (c) Environmental context is the arena in which a firm conducts its business—its industry, competitors, and dealings with the government (Oliveira, 2011).

![Figure 2 Technology, Organization and Environment Framework](image)

The TOE framework has a solid theoretical basis, consistent empirical support, and the potential of application to IS innovation domains. Hsu et al(2006) claims that the TOE framework allows Roger’s innovation diffusion theory to better explain an intra-firm innovation diffusion.
Previous Studies

Context Factors Influencing e-Commerce Adoption

Previous studies have shown that a fundamental understanding of factors influencing perceived benefits of e-Commerce adoption is of great importance to SMEs. Additional benefits include improvement in product quality and the creation of new methods of selling existing products (Agarwal & Prasad, 1997; Grandon & Pearson, 2004; Wymer & Regan, 2007). In previous studies, we analyzed many factors that identify the three aspects of an enterprise’s context: technology context, organization context and environment context.

Technological Context

The previous researchers have studied many factors at the organization’s technological context level. E-Commerce has technical components, and it also has inter-organizational elements which distinguish itself from other types of innovations. Technology adoption and diffusion have been the topic of many researches (Davis, 1989; Rogers, 1995; Tornatzky & Klein, 1982). Syed Shah Alam et al. (2011) used TAM model as the basic theory of adoption of technological products and services. The TAM model focuses on the attitudinal explanations of intention to use a specific technology or service. First of these beliefs is “perceived ease of use” (PEU), which is defined as the “degree to which a person believes that using a particular system would be free of effort”. The second belief is “perceived usefulness” (PU), which is defined as “the degree to which a person believes using a particular system would enhance his or her job performance” (Heijden, 2003). Other key components in the model include “attitude toward using” (AT), “behavioural intention to use” (BI), and “actual use” (AU) (Poon & Swatman, 1999).
“Attitude toward using” (AT) is determined by user’s PU and PEU in information technology use (Dholakia & Kshetri, 2004). The following Table 1 lists the technological factors identified in the previous study.

Table 1 Technological Context Factors Review

<table>
<thead>
<tr>
<th>Item</th>
<th>Variables</th>
<th>Researchers</th>
<th>Freq. of use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tech Context</td>
<td>• Quality of S/W Available in the Market</td>
<td>F</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>• External expertise and Service Availability</td>
<td>F</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>• Reliability</td>
<td>A, K</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>• ICT availability &amp; Tech. infrastructure</td>
<td>K, N</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>• Security</td>
<td>K, N, M</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>• Complexity</td>
<td>A, C, E</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>• Cost</td>
<td>J, K, M</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>• Observability</td>
<td>A, C, E</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>• Trialability</td>
<td>A, C, D, E</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>• Perceived Ease of Use</td>
<td>A, B, D, G, H</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>• Compatibility</td>
<td>A, C, D, E, J, M</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>• Relative Advantage</td>
<td>A, C, D, E, J, M</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>• Perceived Usefulness</td>
<td>A, B, DG, H, I, L, M</td>
<td>8</td>
</tr>
</tbody>
</table>


Organizational Context
The second category refers to organizational factors that relate directly to availability and use of internal resources.
Organizational factors identified in the literature relate to expertise (Al-Qirim, 2004; Huang, 2004), type of products and services, capital, human resources, enterprise size, efficiency, priorities and profitability etc. Syed Shah Alam (2011) and his colleagues discovered that existing Internet connection in the business and knowledge and skills of owner/manager/employees about online businesses reflects a firm’s technological capabilities; therefore, SMEs without such capacity will have a difficult time adopting e-Commerce into their firms. Past research has found that the size of a firm is one of the major determinants of the strategy. Limited resources restrict SMEs' ability to compete (Dholakia & Roy, 1995).

Caldeira and Ward (2002) examined top management attitudes toward IS/IT adoption (categorized as ‘internal context’). Thong and Yap (1996) discovered that managers acted as the main decision maker of the company and had the power to determine the adoption of new technology. Wymer and Regan (2005) included five organizational factors in their research: Technical expertise, Priority, Employee reduction, Profitability and Capital. Many organizations delay the adoption of e-Commerce due to the lack of internal enterprise. Therefore, education and awareness along with IT skill and expertise is necessary for any organization towards adopting e-Commerce. Ajmal et al. (2012), made a research model on internal and external factors influencing e-Commerce adoption in SMEs. The following Table 2 represents the organizational factors studied by previous researchers.

- **Environmental Context**

Environmental factors identified in the literature relate to markets, competitive pressures, government rules and regulations, suppliers, vendors, partners and customers. Pflughoeft et al. (2003) examines a number of marketplace forces
including competitive conditions, transactions with trading partners, competitive threats and demands of marketplace participants.

<table>
<thead>
<tr>
<th>Item</th>
<th>Variables</th>
<th>Researchers</th>
<th>Freq. of use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational Context</td>
<td>Implementation</td>
<td>J, K</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Efficiency</td>
<td>F, G</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Profitability</td>
<td>F, G, H</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Technical Expertise</td>
<td>E, F, H</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Capital</td>
<td>E, F, H</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Priority</td>
<td>F, G, H</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Managers Experience</td>
<td>B, C, E, I</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Organizational Size</td>
<td>D, G, H, J</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Human Resources</td>
<td>D, F, H, K, L</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Organizational Readiness</td>
<td>A, C, D, J, I, L</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Top Manager’s Support</td>
<td>B, C, E, I, J, K</td>
<td>6</td>
</tr>
</tbody>
</table>

D. Coviello & Martin, 1999, E. Caldeira & Wald, 2002, F. Huang et al., 2004

Al-Qirim (2004) used the environmental factors of competition, external support (from technology vendors) and supplier/buyer pressure. In Wymer and Regan’s survey (2005) environmental factors were consolidated in five factors: Competitive pressure from other internet adopters within the industry (Competitive pressure); government rules and regulations (Gov.); viable market or customer base for e-Commerce (Market); availability of the right partners with whom to work (Partners/Vendors); and readiness of suppliers for e-Business (Supplier readiness). Ajmal
and her colleagues claimed that competitive pressure has positive influence toward adoption of technologies. Abdel(2012) studied e-Commerce adoption barriers in Egyptian SMEs and categorized environmental barriers into main groups: culture & social, legal & regulatory, political, and economical ones. Dholakia et al.(1995), investigated external factors at three levels: industry, macroeconomic and national policy level. Al-Dmour and Al-Surkhi(2012) included external(environmental) variables such as pressure from trading partner(client/supplier); pressure from competition, awareness of ethics code of conducts, and availability of litigation acts and enforcement authorities research about factors affecting SMEs adoption of internet based IS in B2B and the value added on organization’s performance. External pressure(Environmental factor) was assessed by incorporating five items: competition, dependency on other firms already using e-Commerce, the industry, social factors and the government.

Liang(2001) studied model of factors influenced on e-Commerce Adoption and diffusion in SMEs and built conceptual framework to his research. The other variable that stems from the industry factor is the competitive pressure which SMEs faced within the industry. As more competitors adopt e-Commerce, small firms are more inclined to adopt e-Commerce in order to maintain their own competitive position. Apart from industry factors, another factor that drives technology adoption in the external environment includes national factors. He claims that given the ongoing rapid globalization of business and systems, there is a pressing need to learn how widely adoption theory applies in other cultures around the world. The following Table 3 represents the Environmental context factors by the previous studies.
### Table 3 Environmental Context Factors Review

<table>
<thead>
<tr>
<th>Item</th>
<th>Variables</th>
<th>Researchers</th>
<th>Freq. of use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environ-mental Context</td>
<td>Enforcement authorities</td>
<td>I</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Critical Mass</td>
<td>A</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Economical &amp; Political</td>
<td>H</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Tech. Vendors Support</td>
<td>C</td>
<td>1</td>
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<td>G, H, I</td>
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<td>Government Support</td>
<td>A, C, E, F, G</td>
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<td>Competitive Pressure</td>
<td>A, C, E, F, G, H</td>
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</table>

Summary of the Context factors

We had three context factors from the previous studies. We chose three variables from each context factor that had the highest research frequencies, and set them as independent variables. The following Table 4 lists summary of the derived factors identified in the previous study.
Table 4 Summary of the Derived Factors Review

<table>
<thead>
<tr>
<th>Items</th>
<th>Variables</th>
<th>Researchers</th>
<th># of use</th>
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<tr>
<td>Tech Context</td>
<td>• Compatibility</td>
<td>A, C, D, E, J, M</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>• Relative Advantage</td>
<td>A, C, D, E, J, M</td>
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<tr>
<td></td>
<td>• Perceived Usefulness</td>
<td>A, B, D, G, H, I, M, U</td>
<td>8</td>
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<tr>
<td>Organizational Context</td>
<td>• Human Resources</td>
<td>H, Q, S, T, U</td>
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<td></td>
<td>• Org. Readiness</td>
<td>K, M, P, Q, T, U</td>
<td>6</td>
</tr>
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<td></td>
<td>• Top Managers Support</td>
<td>F, K, M, O, P, R</td>
<td>6</td>
</tr>
<tr>
<td>Environmental Context</td>
<td>• Social and Cultural</td>
<td>E, F, T, V</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>• Government Support</td>
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<tr>
<td></td>
<td>• Competitive Pressure</td>
<td>E, F, J, T, U, V</td>
<td>6</td>
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</tbody>
</table>

V. Abdal, 2012

**Perceived Benefits of e-Commerce Adoption.**

The emergence of e-Commerce technologies has affected many industries and organizations (Basil & Kurnia, 2008). Previous researches has indicated that significant benefits are achieved by those SMEs that adopt and use e-Commerce in their organizations. Amongst these are reduced cost, increased sales and the ability to reach a global market. Taking this into consideration for Uzbekistan case we carried out our research on the perceived benefits of e-Commerce adoption rather than its adoption.
e-Commerce plays an important role in growth of SMEs as it allow them compete efficiently in both domestic and international markets. The choice of e-Commerce transactions will influence, and as well as affect, the relationships between exchange parties. It can help supply chain management to share knowledge, increase the speed of response, and reduce the costs of servicing a market by improving information exchange between exchange parties. e-Commerce has provided tremendous amount of benefits to SMEs, as e-Commerce continue to evolve it has provided number of research opportunities for Information System(IS) community(Scupola, 2001). e-Commerce not only helps large business to increase their visibility and increase their profit, it also helps small and medium sized enterprises in achieving all those benefits.

RESEARCH METHODOLOGY

Research Framework

In this study we used Technology-Organization-Environment (TOE) model as a research framework. Tornatzky & Fleichers’s TOE model has been widely used to examine the factors that influencing organizational innovation adoption. We chose this specific model because it includes answers to objective questions that are pointed out in the research proposal. The research model is displayed in Figure 3.
In order to answer the research questions and achieve its objectives, the following hypothesis were proposed based on the models presented: The factors technological context represented such as relative advantage, perceived usefulness and compatibility can increase organizations desire to adopt e-Commerce applications. In view of the advantages that e-Commerce offer, it would thus be expected that companies who perceived e-Commerce as advantageous would likely to adopt the e-Commerce. In the context of usefulness, ease of use could be measured by identifying how IT is: Easy to learn, controllable, clear and understandable, flexible, easy to become skillful in and easy to use. Perceived usefulness can be measured by investigating the impact of IT on job performance, speed of work,
increased productivity, effectiveness, make job easier and useful. Building on these arguments, this study hypothesize the following:

H1. Technological context factors have a positive relationship on the e-Commerce adoption.
H2. Organizational context factors have a positive relationship on the e-Commerce.
H3. Environmental context factors have a positive relationship on the e-Commerce Adoption.

Development of the Questionnaires

The questionnaire is composed of two parts, with the total of 47 questions. Likert Scale had five options to choose from, where it ranged from strongly dissatisfied, 1, to strongly satisfied, 5. The average score of independent variables (technological, organization and environmental) will be calculated one by one in chapter 4. The following Table 5 represents the structure of the questionnaires of this study.

Table 5 Structure of the Questionnaires

<table>
<thead>
<tr>
<th>Variables</th>
<th>Item Number</th>
<th>Item of Entries</th>
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</thead>
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<tr>
<td>Demographic Information</td>
<td>1-5</td>
<td>5</td>
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<tr>
<td>Technological Context Factors</td>
<td>6-17</td>
<td>12</td>
</tr>
<tr>
<td>Organizational context Factors</td>
<td>18-29</td>
<td>12</td>
</tr>
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<td>Environmental Context Factors</td>
<td>30-41</td>
<td>12</td>
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<td>e-Commerce Adoption</td>
<td>42-47</td>
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<td>Total</td>
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<td>47</td>
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</tbody>
</table>
Management Review: An International Journal · Volume 9 · Number 2 · Winter 2014

Methods of Data Collection and Data Analysis

Data for this research was gathered using mailed-in (postal) and online questionnaires. The research survey term continued from April 20th, to May 20th, 2014. Each online questionnaire was sent to Small and Medium sized Enterprises in Uzbekistan through e-mails, and also we used social networks such as Facebook.com, Odnoklassniki.ru, Muloqot.uz. During the survey term, we sent out the online questionnaires to more than 750 SMEs in Uzbekistan. From them, total of 149 questionnaires were received. Among them, 133 were evaluated for this study. The study covered all regions of Uzbekistan but the most significant responses were from central regions of Uzbekistan, such as Tashkent, Samarkand and Fergana.

Descriptive Statistic that includes frequency and percentage is a statistical technique used in this research analysis. Statistical Package the Social Science (SPSS) version 18.0 was used to analyze the data collection in this study. For data processing different statistical techniques were used for different purposes. These include descriptive statistics, reliability and validity test, correlation analysis and regression analysis.

DATA ANALYSIS AND DISCUSSION

Descriptive Characteristics of the Sample

The first question was on the respondent’s gender. 86 male respondents had a 65% of the entire population, whereas 47 female respondents composed the rest, 35%. The second question was on the age of the respondent. The highest age frequency was related to the age group of 21-30(59%) with 41-50(33%) of respondents and, the lowest frequency was represented by the
groups younger than 21(7%) and 51 and older(4%). On the level of education, most of the respondents were Post graduation students, with 68(51%) respondents. Secondary school and higher education were 12% and 37% respectively. According to the respondents’ occupation, office workers composed 51% of the population, and managers or executives composed 49%. The industry they were in were manufacturing, construction, finance, service, communication and technology. The population distribution was 32%, 14%, 16%, 25%, and 13% respectively. From the survey, more than half of the respondents showed their initiatives to e-Commerce adoption. But, most of supports were from central regions of uzbekistan such as Tashkent, Fergana and Samarkand. This meant e-Commerce adoption has a bright future in Uzbek SMEs business activities.

Reliability and Validity of Questionnaires

The data analysis used SPSS 18.0 program. The Cronbach’s alpha coefficients of the five construct were about 0.8 and higher indicating a reasonable level of internal consistency among the items making up the factors. Note that the matrix varimax rotation is shown in Table 6. The four dimensions are consistently distinguished across the entire surveyed factors, and they correspond to the proposed variables of the factors. The three constructs of independent variables are: technological, organizational and environmental contexts. One construct of the dependent variable is e-Commerce Adoption.
Table 6 Factor Analysis

<table>
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<tr>
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<th>Fac</th>
<th>RA</th>
<th>PU</th>
<th>CP</th>
<th>TM</th>
<th>OR</th>
<th>HR</th>
<th>CP</th>
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</table>
The results of the variables of the correlation analysis are shown in Table 7. The correlation significance level between all variables was measured in the significant mode of 0.01. The correlation coefficient of independent variables Relative Advantage, Perceived Usefulness and Compatibility factors appeared to have a correlation relationship with the value of 0.528 and 0.660. The same high results can be seen between the factors Top Managers Support and Organizational Readiness 0.533. This study shows a significant level of correlation for all factors of the derived variables. Therefore, the problem of multicollinearity on regression analysis may be raised.
The regression analysis was carried out to determine the influence of both independent and dependent variables when they adopt e-Commerce. The significant hypotheses explained a substantial amount of variance in e-Commerce Adoption ($R^2=0.510$, particular interest in the regression output). On the test for autocorrelation in the residuals from statistical regression analysis, Durbin-Watson statistics is always between 0 and 4. In our study, the number of turned out to be 1.496 less than 2, which shows that approaching 0 indicates positive autocorrelation in the sample. The results of multiple regression analysis on Perceived Benefit of e-Commerce Adoption shown in Table 8. The significant level of 0.001 shown for “human resources” and the significant level of 0.05 is shown for the factors perceived
usefulness, organizational readiness and competitive pressure. Relative advantage, compatibility, Top managers support, government support and social & culture do not have any significant level on e-Commerce adoption.

Table 8 Regression Analysis

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficient</th>
<th>Standardized Coefficient</th>
<th>t</th>
<th>P value</th>
<th>Collinearity Statistics</th>
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<tr>
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<td>B</td>
<td>Std.Error</td>
<td>Beta</td>
<td></td>
<td>Tolerance   VIF</td>
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<td>.085</td>
<td>.079</td>
<td>.807</td>
<td>.421</td>
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<td>.075</td>
<td>.148</td>
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<td>3.885</td>
<td><strong>.000</strong></td>
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<td>Competitive Pressure</td>
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<td>.269</td>
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<tr>
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<td>F value</td>
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<td>R²</td>
<td>.510</td>
<td></td>
<td>Durbin Watson</td>
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</table>

*p<0.05, **p<0.01, ***p<0.001

Hypothesis, H2(β=0.255, p<0.01), H5(β=0.203, p<0.01), H6(β=0.379, p<0.001), and H7(β=0.269, p<0.01) were supported with an implication that perceived usefulness, organizational readiness, human resources and competitive pressure factors have a positive influence on perceived Benefit of e-Commerce adoption in Figure 4. This analysis does not support hypotheses H1, H3, H4, H8 and H9 at 0.05 significant level, implying that relative advantage, compatibility, top managers support,
government support and social and culture factors do not have positive effect on perceived benefit of e-Commerce adoption.

Figure 4 Results of the Hypothesis Test

**Interpretation and Discussion**

The main goal of this study is to identify the factors influencing perceived benefits of e-Commerce adoption by SMEs in Uzbekistan. In order to interpret data, we first over-viewed literature reference and result of the analysis. The selected dimensions, formulated to perceived benefits of e-Commerce adoption, represent technological, organizational and environmental contexts. Considering perceived benefits of e-
Commerce adoption for organizational performance, the factors “perceived usefulness” from TC; organizational readiness, and human resources from OC, competitive pressure from e-Commerce have a positive influence on perceived benefits of e-Commerce adoption by Uzbek SMEs.

<table>
<thead>
<tr>
<th>Hypotheses and description</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1 Relative Advantage factor have a positive influence on Per. Ben. of e-C Adoption</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H2 Perceived Usefulness factor have a positive influence on Per. Ben. of e-C Adoption</td>
<td>Supported</td>
</tr>
<tr>
<td>H3 Compatibility factor have a positive influence on Per. Ben. of e-C Adoption</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H4 Top Managers Support factor have a positive influence on Per. Ben. of e-C Adoption</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H5 Organizational Readiness factor have a positive influence on Per. Ben. of e-C Adoption</td>
<td>Supported</td>
</tr>
<tr>
<td>H6 Human Resources factors have a positive influence on Per. Ben. of e-C Adoption</td>
<td>Supported</td>
</tr>
<tr>
<td>H7 Competitive Pressure factor have a positive influence on Per. Ben. of e-C Adoption</td>
<td>Supported</td>
</tr>
<tr>
<td>H8 Government Support have a positive influence on Per. Ben. of e-C Adoption</td>
<td>Not Supported</td>
</tr>
<tr>
<td>H9 Social and Culture factor have a positive influence on Per. Ben. of e-C Adoption</td>
<td>Not Supported</td>
</tr>
</tbody>
</table>

Highlighting the supported hypotheses, it implies that H2, H5, H6, H7 the factors like perceived usefulness, organizational readiness, human resources and competitive pressure positively influence on the companies benefits received from adopting and implementing e-Commerce in the company. As more and more firms using the internet for marketing and customer service will impact the competitiveness and accelerate the SMEs toward
adoption of e-Commerce. Overall, the factors influencing on perceived benefits of e-Commerce adoption by Uzbek SMEs are as follows: perceived usefulness, organizational readiness, human resources and competitive pressure factors enhance enterprises desire to implement e-Commerce in their business activities.

CONCLUSION

This research gives a chance to find out about the influencing factors on e-Commerce adoption by SMEs in Uzbekistan. A number of studies were carried out to identify factors most critical and successful for perceived benefits of e-Commerce adoption by SMEs. In order to realize the full advantage of perceived benefits of e-Commerce adoption solutions we needed to identify the influencing factors. We first reviewed the studies about adoption factors that were most influential to e-Commerce adoption by SMEs. In the review process, we recognized that many studies used their own approach to identify the influential factors to the perceived benefits of e-Commerce adoption by SMEs. These factors were organized in many dimensions: Technological, organizational, knowledge, individual and environmental contexts. Considering existing taxonomy, we attempted to identify the comprehensive influencing factors for Uzbek SMEs on the e-Commerce adoption decision: Technology context-relative advantage, perceived usefulness, and compatibility; Organizational context-top managers support, human resources, and organizational readiness; Environmental context-competitive pressure, government support, social, and cultural.

In conclusion, there was a positive relationship between the factors perceived usefulness from technological context; organizational readiness and human resources from organizational context; competitive pressure from environmental
context and perceived benefits of e-Commerce adoption by SMEs. From the aspect of technical characteristics the numbers of respondents were inconsistent for the industries tested. The perceived importance of factors may differ across different industries, services, manufacturing, telecommunication etc. Time and resources were also, one of the limiting factors. Future studies should focus on a specific industry that succeeded in adopting the e-Commerce or e-Business, to acquire the useful success factors in that particular industry. This study will be helpful as a guideline to the countries considering to adopt e-Commerce in their SMEs.

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Nevertheless, how to foster managerial review and insights have not been appropriately explored in terms of global or local business perspectives. In fulfilling of this urgent and timely theme, business management need more sustainable profitability, better operational excellence, higher goods and services quality, more proper market promotion, stronger leaderships, and more accurate financial planning in order that business organizations are more competitive.

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• Tutorials in management
• Other related topics

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