The Impact of Technological Innovation on the Performance of Insurance Industry: A Case Study of Adamjee Insurance Company Limited

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Abstract
The usage of high technology products and software increased tremendously in the twenty first century. Organizations introduce various technological innovations to increase their productivity. The purpose of the study was aimed to explain the importance of technological innovations, the hurdles faced by organizations in adopting technological changes and the impact of technological innovations on the performance of insurance industry. Qualitative research methods were applied to conduct the study and in-depth interviews were conducted from 12 respondents from Adamjee Insurance Company Limited to collect primary data. The data was analysed using content analysis and it was found that the technological innovations have great importance for insurance industry and these innovations. Technological innovations resolve many critical problems, make the tasks systematic, reduce marketing costs of organizations and increase the client’s satisfaction. It was concluded in the research that technological innovations have a positive impact on the performance of insurance industry if the technological changes are adopted according to market situations and requirements of the organization.

Key words: Technology innovation, insurance industry

1. Introduction
Every organization, whether manufacturing or service, is trying to grow in order to attain the maximum profitability growth and retain its stakeholders’ value (Richey et al. 2009). Innovation has always played a critical role in predicting the long-term survival of organizations and in determining an organization’s success (Higgins, 1995). During the past decade, information technology has attained a great deal of importance, both from the academicians, and also from the business community, because an increasing number of companies are implementing it. Businesses adopt innovations in order to keep their pace smooth in the wake of rapid advancements in technology. Such changes are introduced with the aim to improve the organizational performance level (Y. H. Wu 2010).

IT systems and software play a pivotal role in the progress, customer loyalty and overall performance of the organizations. Using the latest IT system, managers of the insurance companies are able to process work quickly and the response to their customers has been faster and prompt (J. H. Wu and Wang 2006). IT itself is not a solution to all problems but it is a tool and an opportunity. To make it valuable, it must be integrated with the planning process of the business according to customer needs and market trends and consistently checked for maximum beneficial use.

Information Technology has advanced greatly in recent years. Every passing day new software, products and IT systems are being launched with an aim to cater to any kind of need of the customers. This advance in knowledge and technology systems has caused such a great impact upon social and economic development that we now routinely speak of the ‘information economy’, the ‘digital economy’, or the ‘knowledge economy’ (J. Zhouying 2004a).

In order to increase the customer loyalty and to maintain performance of organizations, new services and products are introduced in the market. The new products and services aim to enhance the customer loyalty and help finding new ones. IT systems are software help in reducing the marketing costs, targeting the desired customers and improving the overall marketing strategies. Technological innovations enable the employees to give quick response to customer needs because it is possible for the organizations to meet the customer needs if
system is supported by the technological innovations and developments. Technology, innovation and knowledge are keywords of dictionary for the business executives and policy makers i.e. top level management. Such terminologies have immense importance for successful survival of their organizations.

For about more than ten years, many empirical studies regarding information technology added in the literature and measured the relationship of performance with technology investments. On the other hand, the findings of these studies, especially, those measuring the relationship between Information Technology and productivity, have been mixed. There has been a differing opinion of research scholars on the impact of technological innovations on the overall productivity of the service organization. Licht (1999) argued that IT is positively related with productivity of the organization. According to Landauer (1999) the relation between technological innovation and organizational performance is not strong.

In order to identify the relationship of technological innovations and performance of an organization, the leading insurance company i.e. Adamjee Insurance Company Limited was chosen as a case to be studied. The performance of Adamjee in the recent past has been outstanding and Adamjee captured 38% of the total market share. The impact of technological innovations on the performance can be best studied in an organization like Adamjee.

1.1 Organizational background

Adamjee Insurance Company Limited AICL was set up in 1960. Initially Adamjee provided life and general insurance to its clients till 1974 when the life insurance sector of Adamjee was nationalized. After that AICL provided general insurance for motor, fire, marine, and miscellaneous risks. Recently Adamjee launched new types of insurance policies which are: Home Insurance, Kidnap & Ransom, Personal Accident, Medical Insurance & various types of covers for Power Generation/Infrastructure Projects (http://adamjees.net/Adam-Insurance.aspx). AICL holds 38 % of the total market share and is the leading insurance company in Pakistan among a total of 40 general insurance companies.

Adamjee has increased its services and shares the risk of its clients from aviation, architecture, engineering and other sectors where the risk of loss is very high. AICL is a Public Limited Company and is listed on the three Stock Exchanges in Pakistan. It has expanded its services in UAE and focusing on expansion of services in Bangladesh too. It has private strategic partners both in Pakistan including MCB bank and worldwide with firms like Hollard. In 2010, AICL has entered into life insurance business as well in a partnership with a South African insurer.

2. Review of Literature

2.1 Importance of Innovation

Innovation is a primary source of industrial change, competitive edge and technological advancement (Damanpour et al. 2009). In practice and evidence, it is proved that organizations do innovation (R.M. Walker et al. 2011). Scholars focused less on the importance of cross-sectional studies in understanding innovation in organizations and primarily longitudinal studies are used in order study the management of innovation (Ferrary 2010). The expanding wave of technological innovations in a recent decade has led to the renewal of outlook and operations of several industries. Every organization is trying to grow in order to attain the maximum profitability growth and retain its stakeholders’ value (Richey et al. 2009). Previous researches on innovation clearly indicate that technology is largely considered as part of innovation and it is also observed that organizations manage their innovation needs through their research and development activities (Miles 2010).

Organizations adopt innovations in order to keep its pace smooth in the wake of swift technological changes. Such changes are introduced with the aim to improve the organizational performance level (Y. H. Wu 2010).
There are few studies conducted on organizational and administrative studies (Lam et al. 2011). According to Brown (2010) innovation is like an engine of growth for an industry. It is considered as a prerequisite in business for market competitiveness. It brings new developments and results in the growth of a business in particular and industry as a whole in general. It is very important to consider that how to create new growth in business (Christensen et al. 2009).

There are different types of innovations, for example Tidd et al (2005) argue that there are four types of innovation in service sector such as product innovation which consist of new products or improvements on products, process innovation, where a new process or improvement is made in some part of the old one order to make it more useful, positioning innovation in which a company introduces change in such a way that the customers starts liking the old existing product or service with new positions or brand in their mind, and paradigm innovation where major shifts in thinking cause change (Tidd et al. 2005; Toivonen 2010).

In today’s challenging environment those organizations which remain reluctant to introduce new products or unable to cope with modern techniques and largely rely on sustained growth, have shown poor performance. While other organizations performed well because they primarily refocused their energies on the generation of variety of products in order to provide more choices to their customers (Evangelista and Vezzani 2010).

“Innovation is much more than invention. It is the creation of a new idea and its reduction to practice and it includes all the activities required in the commercialization of new technology” (Freeman and Soete 1997). Different service based firms compete each other with respect to low cost and better service provision. In this regard technological innovations paved an additional benefit of one organization to the other and it has a central role to play in comparative and absolute dimensions. Innovation has the potential to improve the odds within the organization as information is attained through several different areas of knowledge (Leiponen and Helfat 2010).

Innovation can be an idea, method, tool or a technique which has a potential to replace the previous traditions, practices and tools and techniques. These new methods and practices are introduced in scientific, technological, financial, organizational, and business activities. The growing trend of innovations has rapid results in the growth and development of new products and services in daily business activities (Dodgson et al. 2008).

2.2 Importance of Technology

From the ancient Greek times till today, some studies have been conducted about what technology is while others are conducted to investigate the spirit of technology. For example it is an admitted fact that primitive men led better life due to advance tools and communication skills than the anthropoid apes. They developed tools, learnt how to make use of fire for their benefit and started communicating via language. With respect to ancient times all these were technologies. During the last two decades, technology has spread rapidly in different fields of life started from Roman era till 21st century (Jin 2011: 22).

“Technology is a replicable artifact with practical application, and the knowledge that enables it to be developed and used. Technology is manifested in new products, processes, and systems, including the knowledge and capabilities, needed to deliver functionality that is reproducible” (Dodgson et al. 2008: 2). Technology has acted as a catalyst which generates new methods to get the things done. It has a supportive role in the development of an easy access to customers. It really boosted the insurance industry growth (Puelz 2010).

When a technology is introduced in a business entity, some fundament issues are observed. These potential problems direly demand immediate attention and intervention from the top management. In this regard central knowledge base is very fruitful while communicating the importance of new technology in the eyes of overall employees of the firm (Brown et al. 2007).

There is also a need of capacity and willingness in old employees to absorb new technology to facilitate the equilibrium within and outside the business entity. Executives having the exposure of new technology can make better decision of how to make use of technology for the firm (Massey 2001). In the same way, members of the IT firm having an idea of business can effectively handle the new technology during the whole process of implementation which really adds value to the business. This recommends that during difficult times,
organizations must spend in employees’ training, research and development, new short courses, enhancing communication skills, attending relevant conferences and in equipping them with new knowledge about innovation and advanced technology. Those organizations which remain unable to invest in these knowledge propagation and learning based future activities, they may find themselves useless in the wake of new technology. As a result, these organizations could not take support from their best formulated long term and short term business strategies (Bassellier and Benbasat 2004).

In addition, the vision of the organization should be broad and carefully designed. It clearly depicts in the culture of the organization and should be a part of the popular norms and traditions within the organization. Improper communication process can lead to several problems even at the initial level. Organizations may be sunk if they lack the prerequisites to adopt new technology. With the passage of time more attention from the organizational members is required as the implementation process goes on (Brown et al. 2007). The motivation level of the employees is to be maintained until the project is completed in order to keep their moral high. Such type of propagation is to be clearly communicated from the top management that nothing is more significant than the project success. The representation of these implicit ideas should also be depicted from actions during the dealing with the junior cadre employees. As the project move on, the subsequent effect of underline propagation must also broaden its base and put positive influence to further increase the momentum of doing work of employees. Therefore doing initial project with the acceptance of employees in terms of commitment, attention and hard work result in the successful completion of the project. It is generally considered that information technology facilitated business in terms of its horizontal and vertical growth provided that the existing systems are supportive to new growing trends (Xiang et al. 2009).

It is very important to equip the employees with central basic knowledge about new technology. In this regard managers having a prior understanding of new technology can be a valuable source for the company and supportive to the lower level employees. Communication is very important during the process of implementing the innovation (Brown et al. 2007).

2.3 Impact of technological innovation on business

Rapid change in the global environment has resulted new trends to be adopted dynamic organizations. These trends have forced them to introduce new business technologies and innovations and make a shift from the existing old methodologies to modern innovative techniques. These technological innovations proved to be very significant in the presence of Increasing competitive intensity and globalization. (Bardhan et al. 2007). Organizations are trying to shift their responsibility from their internal management to a third party by developing a mechanism through outsourcing scheme. They are also contracting with vendor for their production processes and support processes (Roberts and Amit 2003).

Normally, people have perception that there were four technological revolutions during last two centuries. One of them was focused on the mechanical techniques and technological and scientific principles of Newtonian mechanics. This was happened in the middle of eighteenth century. The second revolution took place in the last decades of eighteenth century; and it was focused on electrical technology and electromagnetic theory. The next one was centered on the practical use of new technologies and innovations of modern physics, information technology, nuclear energy and space sciences; the period of this revolution moves round the center of twentieth century. And finally, fourth revolution took place in closing years of twentieth century which was basically focused on communication technologies, computing, breakthrough in biotechnology and integration of microelectronics. (Jin Zhouying 2004b).

As the technologies are sprouting rapidly in all sectors especially in Information Technology industry, so it would be a great hammering if these innovations are not brought to market swiftly and consequently, firms have to bear a decline in profits and even though losses to some extent. Another important aspect is that they have to enter into market with these technological innovations in a better and a useful way; otherwise all efforts would have no advantage at all. Thus, concluding the above statement we can say that optimal benefit can be achieved by introduction of new inventions in the market at right time in a right way. To fulfill the requirements of
businesses, individuals and societal is the success in actual. And this is the way how we can avail maximum benefit from available opportunities. (Grant 2009). Labor rates vary from county to county, so when there is high labor rate in a particular area or country then the manufacturing concerns, generally, moves to those countries for production where there is a cheaper labor rate. For about more than ten years, many empirical studies regarding information technology added in the literature and measured the relationship of performance with technology investments. On the other hand, the findings of these studies, especially, those measuring the relationship between Information Technology and productivity, have been mixed due to many reasons. First reason behind the mixture of these findings is that these studies could not taken into account the relationship of technology investment and firm productivity because due to technology investment, product quality and production efficiency increases to great extent and ultimately it has a positive impact on the productivity of the firms. Meticulously, it is general assumption that technology investment enhances both productivity and profits. (Thatcher and Oliver 2001). History of innovation has more significance than that of the introduction of new products in any kind of organization and industry. Organizational success is directly related to the history of innovation. Technology, innovation and knowledge are keywords of dictionary for the business executives and policy makers i.e. top level management. Such terminologies have immense importance for successful survival of their organizations. However, the innovation scientists and experts are rethinking about the utilization of novel technologies and innovations due to negative use of technology and greediness of the people regarding economic benefits (Jin 2011: 15). Most of the innovations theories are drawn on the basis of studies conducted on firms having well industrial background. In recent times, some research studies have been carried out by considering the difference between services and manufacturing organizations as the researchers divided the organizations according to the nature of their operations and activities. In these studies a positive trend has been observed about the growth and progress of innovation models, particularly, for the service sector. (Gallouj and Savona 2009).

An important aspect of information technology is that it has enduring impacts on productivity augmentation. The relationship between productivity growth and industrial technology under the old era is very simple and straightforward: more investments produce more equipment and machinery and there would be enhanced productivity. Consequently, our productivity growth is dependent on capital because spirited and competitive business firms have competition among themselves and they want to succeed by focusing mainly on the productions. Introduction of new development regarding production can have recurring impacts on productivity intensification. Such productivity is affected severely during economic slump because labor and equipments are not used to their maximum extent. On the other hand, productivity has a tendency to get higher during economic escalations and booms. (Ky-hyang and Park 2010).

However, in an information technology driven economy, the relationship between information technology and productivity growth is absolutely dissimilar. A minor investment in information technology which may not cost very much can have massive impact on managerial and directorial structure. In addition to that, it can also affect the production pace. Hence, information technology innovations may have volatile as well as lifelong impacts on growth of productivity in an IT-based financial system. There are many potential sources attributable to IT due to the quickening of productivity growth. First of them is that, benefits could be increased radically by increasing the number of consumers through IT related investment by creating the network externalities. Secondly, IT-related investment may enhance returns by reducing the costs due to huge productions. Marginal cost of IT-related investment could be negligible but the fix cost might be large. As a final point, investment in information technology sector may affect not only productivity growth of IT segment itself, but productivity growth of other sectors of economy as well that depend upon IT applications. Innovations regarding information technology can create knowledge and inventions anywhere around the Globe. (Fare et al. 2001). Many people started new projects but most of them were unsuccessful due to unavailability of apposite new technology. The main causes of this failure were untrained employees and less attention towards employees’ skills enhancement programs, shortage of knowledge, unavailability of central warehouse of information technology and lack of
proper planning to manage the whole system. Another important cause of its failure is that, new technology has been introduced chaotically and in an unsystematic way (Brown et al. 2007). To measure the technology gap, researchers conducted study by comparing the production efficiency of average machines in use and best machines available in the market. The findings of the study revealed that the gap between performances of above stated two machines was only 15 percent in 1975 where as this gap had broadened to 40 percent in 2000 (Cummins and Violante 2002). The researcher of this study suggested that new equipment utilization can enhance the performance (Baily 2003).

There is a difference between manufacturing sector and service sector with respect to the exposure of innovation. There is no trajectory seen in the services sector as it happened in the manufacturing sector. Therefore, introduction of innovations in manufacturing concern has no relationship at all with the service industry.

2.4 Impact of Innovation and Technology on Service Industry

The issue of impact of innovation and technology on service industry has widely discussed in earlier research studies but the primary focus was on the idea that computers enhance productivity (Fixler and Siegel 1999). This kind of response is mixed. Yet, technology has become an important field of corporate investment. It is even contributing significantly in the total sum of Gross Domestic Product (GDP) of a country. For example IT market value has contributed 4.5 percent of its GDP in 1994. Therefore companies are investing in technology and innovation with the underline aim to increase their productivity (Brynjolfsson and Hitt 2000).

There is a speedy growth of innovation, technology and new knowledge in service industry. Trend of knowledge based services and new developments in IT are primary reasons behind rapid change in financial realities (Zhao et al. 2010). The introduction of E-Commerce in service industry is very important due to internal and external factors. They can improve firm’s ability in many dimensions such as communication with existing and new customers. But, unsystematic introduction of such innovations couldn’t provide the required results regarding E-Commerce (Ramsey et al. 2008). Due to aforementioned reason, people think service sector as supplier dominated.(Pavitt 1984). People have opinion that service industry still has to get rid of hurdles to adopt technological innovations. (MacGregor 2004). Economic theories have some assumptions that the organizations work for maximization of their profits; therefore, firms would compare their marginal benefits with their cost of innovated technologies i.e. cost and benefit analysis (Canepa and Stoneman 2004). People should be made aware that Electronic commerce can reduce cost significantly and improve performance to great extent so that they may resist minimal to adopt new technologies.(Moore and Benbasat 1991). The innovation in insurance corporations is under consideration from a couple of years and many studies have also been carried on in this regard (Gallouj and Savona 2009). Revolutionary changes in service sector have been brought by technological innovations. Due to increased competitive environment are organizations are in critical situation and they are desperately conducting research and development activities for customer satisfaction so that they would be able to survive in the given scenario (Jansen et al. 2006). The adoptability of organizations can be judged by introducing new developments and check how efficiently they adopt new inventions (Kundu and Roy 2010). Service sector contributes to overall business world very much so high tech-industries are moving towards service sector.(Jin 2011). The writers develop different models and show relationship among competitive strategy, innovation pattern and stage of development (Linton and Walsh 2008).

2.5 Importance of Technological Innovation for Company to remain a Market Leader

The application of technology has been crucial for the development of society and its economy. From the early days of ‘double-entry book-keeping’, and shareholding systems, to contemporary finance-derivative tools and e-commerce systems, various social exchange technologies have been invented to facilitate economic and social activities. These exchange technologies have largely been developed in the manner of learning-by-doing. Practitioners and observers summarize the perceived rules of their activities and accumulated experiences, following thousands of tests and experiments, and eventually adapt these results to different cultures, social institutions and technological levels (Demirkan et al. 2009).
Some scholars such as (Lau et al. 2010) argue that the structural shift towards service industries is at least partly responsible for our inability to measure positive productivity effects of IT. Quality aspects of technical change are hard to assess, especially in services. Based on new data for Germany we try to show that this is a significant problem for empirical research on the effects of IT.

The problem of measuring productivity in the service sector has received considerable attention recently (Griliches 1992). Therefore we only provide a brief summary of related literature. One possible way to analyze these effects is to separate computer-capital from non-computer capital as (Brynjolfsson and Hitt 1996) did. They found that computer capital shows a higher rate of return. Constructing a capital stock in computers as they did, however, assumes that the utility derived from an investment only depends on the nominal value.

The success of an organization is directly related to its historical record of innovative activities (Chen et al. 2009). The combining effect of innovation types on organizational performance can be well explained over time (Damanpour et al. 2009). According to the theory of socio-technical system, the changes in technical system of the of the organization is related to the social system changes to achieve organizational goals efficiently (Dawson and Daniel 2010)

Market growth is largely dependent upon innovations. Financial markets put more and more pressure on managers of the organizations to grow faster and demands from them to remain alert and active regarding new inventions. These executives can only reduce their burden through innovations and keeping the investors satisfied by their timely suggestions on investment opportunities. (Christensen and Raynor 2003). New business model innovation are a big challenge for the organizations in spite of the fact that they possess huge resources, latest technology and other market expertise. (Koen et al. 2010).

2.6 Impact of technological innovation on the performance of insurance industry

(Sümegi and Haiss 2008) believe that insurance industry in the presence of new technology and innovations has played a major role in promoting financial sector. It has enabled the insurance industry to become a global phenomenon. It was also acknowledged in the (Malaysia 1999) that the insurance industry could promote economic development by mobilizing domestic savings of a long-term nature through life insurance products (Sümegi and Haiss 2008).

2.6.1. Technological innovation and customer loyalty

There is a great impact of new technology on customers’ loyalty while getting an easy access to company products and services. Innovation is key, whether it’s innovation in the products themselves or innovation in how those products are put into the hands of consumers (from rapid delivery to product introductions) and the after-life of service and support that the consumer experiences.

In order to increase the customer loyalty and to maintain performance of organizations, new services and products are introduced in the market with the aim to retain the existing customers and target new clients. This approach leads towards applying new techniques; innovation in operating systems and management processes (Terziovski 2010). It has experienced a lot of technological innovation including automated reporting portals and integration of attitudinal and behavioral data in customer relationship management applications. The multidimensional measurement approach to conceptualize customer loyalty provides new insights into growing business through existing and new customers. The objective measures of customer loyalty include decisions to repurchase, purchase different products, and increase purchase size. It cites that customer surveys other than objective loyalty measures are more commonly used way to assess customer loyalty because these allow companies to easily gauge levels of customer loyalty (Hayes 2008).

2.6.2 Technological awareness and reduction in the marketing cost

Because of it's "core advantage in the capacity of fast, integrated, and interactive exchange of information" and its versatility to reach customers in the global market at relatively low cost, Internet advertising has rapidly become a new popular communication medium in the market (Avlonitis and Karayanni 2000). Today there are
thousands of Web sites created by companies to promote their products and services and to perform other marketing functions, such as corporate image building, after-sales supporting services, and relationship building with customers through data mining (Sharma 2002).

2.6.3 Technological innovation and development can help upper management to make the strategic plan more effective

Throughout the history, technological innovations and development helped the top level management to make policies in a better way. It makes possible to meet the market demands in a more efficient way. Technology, innovation and knowledge are keywords of dictionary for the business executives and policy makers i.e. top level management. Such terminologies have immense importance for successful survival of their organizations (Jin 2011: 15). A minor investment in information technology which may not cost very much can have massive impact on managerial and directorial structure. So, Innovations regarding information technology can create knowledge and inventions anywhere around the Globe. (Fare et al. 2001).

2.6.3 Quick response to the customer

As supported from literature that the organizations during technological innovations give quick response to customer needs because it is possible for the organizations to meet the customer needs if system is supported by the technological innovations and developments. According to (Terziovski 2010), a firm needs to consider consumer perceptions of the firm as a whole, and not just new products and technologies, and take into account a functional–cognitive perspective as well as consumer emotions and experiences. According to (Homburg et al. 2010), the consumers’ skyrocketing desire for experience and authentic innovation are exerting the strongest impact on customer decision-making and profitable engagement with the brand. Brands able to meet or exceed these expectations become category leaders.

2.7 Use of Technological Innovation in World Insurance Industry in general and in Pakistan Insurance Industry in particular

Today the insurance sector is a major global industry covering a huge range of risks ranging from natural disasters and environmental hazard, through life and disability and standard property risks (fire, explosion, burglary, and so forth) to various types of liability under tort and civil codes to protecting the balance sheets of credit granting institutions.

Insurance in its pure form is a social good and in a number of cases can be classified as a public good (Lester 2008). Life insurance can intrinsically include a savings element, and in many late transition and industrial countries this component dominates funds flows in the sector. This flow of funds effect can be exaggerated by the fact that in recent decades the life insurance sector has begun to compete directly with mutual funds and unit trusts. Non-life insurance contracts, which insure material and financial risks, typically run for one year and are renewed on the basis of updated risk information.

Modern form of non-life insurance was established Genoa, Italy in 1336. Very soon similar type of concept spread in other parts of Europe. On the other hand the concept of life insurance originated in Roman times. For different reasons, these forms of insurance were banned including religious causes (for example fire insurance was shunned in Southern Germany for a period because it was seen as prevented God from exercising his displeasure) (Lester 2008). The long history of market liberal approaches of UK attracted insurance sector and the country appeared as the most insured one among the other countries of the world. But in modern times in the early nineteenth century, United States adopted more pro-market strategy and pioneered in this sector (James 2007).

A new role outside the normal development path is now emerging for the insurance sector. This involves protecting the working poor from falling into poverty due to catastrophic idiosyncratic events such as death or illness of the wage earner or systemic events such as drought and is somewhat similar to the social role played by friendly societies and industrial insurers in the U.K. and Europe in the late nineteenth and early twentieth century. It comes under the general heading of micro insurance. Micro insurance for the poor and informal sectors is still at an early stage of development but has considerable potential, both in the credit related sense
In Pakistan the insurance industry has taken huge treads since the inception of Pakistan. When Pakistan came into being, Pakistan's inherited five insurance organizations. Realizing the need of promoting indigenous insurance industry the government of Pakistan established Pakistan Insurance Corporation (PIC) in 1953 (Chishti 2008).

Banking according to Islamic principles is escalating very in Pakistan and around the world. This popularity has attracted two largest reinsurers, Munich Re of Germany and Swiss Re of Switzerland for catering the reinsurance needs of Takaful companies operating in the Gulf, Malaysia, and other Muslim countries (Akram et al. 2011).

According to (Shaukat Malik et al. 2011), The insurance industry of Pakistan has made spectacular progress in all spheres during the last 60 years. Not only the volume of business has increased, but the technical knowledge has also kept pace with its growth. Main reason of this exceptional turn-around in insurance industry has been achieved because insurers are evolving new products to cater to the needs of consumers, which was non-existent a couple of decades ago (Looney 2001).

Pakistan established National Insurance Corporation (presently National Insurance Company Limited) in 1976. Since then, it has been the sole insurer to the government and semi-government bodies. In 1980s no significant development took place in the insurance industry until the financial sector reforms were initiated by the government in early 1990s. These reforms have also encouraged investments in insurance business. The number of local insurance companies increased to 62 in 1995 while foreign participation was reduced to 9 companies (Shaukat Malik et al. 2011). The new Insurance ordinance was promulgated in August 19, 2000 by the SECP that increased the minimum paid-up capital of non-life insurance companies to Rs. 80 million and for life insurance companies to Rs. 150 million. Currently, there are about 54 insurance companies out of which 49 companies offer non-life insurance and 5 offer life insurance services. The non-life insurance industry also includes six companies that also provide health insurance coverage(Afsar 2006; Zamir 2006)

The use of Information Technology (IT) by business firms has increased tremendously, so is case with insurance industry. In an IT based economy the need for E-Insurance has become imperative to meet the current challenges of the 21st century. The Insurance companies in the world are using IT to increase their productivity/income and customer base by using latest IT systems. The Pakistan’s insurance companies are not lacking behind and using latest IT systems for performance improvements. E-Insurance in Pakistan is growing rapidly. There are changes taking place in the IT landscape of Pakistan’s insurance industry. The purpose of this paper is to know about the IT usage in the insurance industry and where Pakistan stands in terms of IT adoption at its major institutes like Adamjee Insurance Company Ltd. The State Life Insurance Corporation of Pakistan is also increasingly utilizing Information Technology (IT) since long but its efforts are not properly aligned with its current need and at par with the world. (Shaukat Malik et al. 2011).

Talha (2007) argues that since the business of insurance companies is to spread the risk, therefore the Pakistan Reinsurance Corporation (presently called as Pakistan Reinsurance Company Limited) was established in 1953, with the aims to establish a domestic reinsurance company, to boost the profitability of domestic insurance companies and to reduce the outflow of foreign exchange that was earlier used as reinsurance premiums made to reinsurance companies mainly in the U.K. In 1955, to promote insurance culture in Pakistan and to assist small insurance companies in meeting financial requirements the National Coinsurance Scheme (NCS) was initiated. According to (Talha 2007) it also aimed to have checks and balances on government expenditure on insurance and to assist in settlement of claims in which the government was the beneficiary. The formation of NCS yielded favorable results, Moreover, economic growth in 1960s further promoted the insurance business in the country and the number of Pakistani insurance companies increased to 26 and reached to 47 by 1971. However, the number of foreign companies decreased from 77 in 1947 to 25 in 1972 due to political uncertainty and separation of East Pakistan.

Many researchers have investigated the other potential benefits of IT in insurance industry as well. Harris & Katz(1991) for example, found that organizational performance in the office operation of systems technology
leaders in the life insurance industry was linked to the level of information technology investment intensity. Firms, whose organizational processes were more integrated and coordinated through information technology, outperformed other firms even when firm size was controlled. Firms with the most improvement in their organizational performance exhibited greater premium income growth, lower operating costs growth, lower non-information technology costs growth, higher growth in the IT expense ratio and larger reduction in the ratio of IT costs to premium income.

In this volatile business environment, the insurance industry is struggling to find ways to create sustainable value. There are no doubts, still certain limitations on use of IT in all insurance services. Many insurance products cannot be delivered across the Web because they require complex underwriting processes that cannot be supported in real-time or because regulatory restrictions prohibit it. Moreover, finding and hiring the experienced IT professionals necessary to convert, leverage and support existing legacy systems, data, platforms and development tools into Web-enabled solutions is also expensive and time-consuming (Bill 2004; Zamir 2006)

3. Research Methodology
According to (Looney 2001) The insurance industry of Pakistan has made spectacular progress in all spheres during the last 60 years. The volume of business and the technical knowledge has also kept pace with the growth of insurance industry. Main reason of this exceptional turn-around in insurance industry has been achieved because insurers are evolving new products according to the needs of consumers, which was non-existent a couple of decades ago.

In the previous chapter, literature related to importance of innovation, importance of technology, Impact of technological innovation on business and service industry, Impact of technological innovation on the performance of insurance industry and Use of Technological Innovation in Pakistan Insurance Industry, has been critically reviewed. This chapter will justify the methodological framework of current investigation. The findings of a literature review must be checked against a real world problem by collecting the relevant information from real people (Creswell 2003). In order to check theory against practice, the data will be collected, compared and analysed. This chapter will help a reader to understand that how research objectives were achieved and what type of primary research methods were used for the current research.

3.1 Research Purpose
Historically qualitative research has been given less than a fair sense of appreciation and has been criticized for lack of scientific rigor, small samples, subjective and non-replicable efforts (Denzin and Lincoln 1994). Today, researchers and buyers of research still see qualitative research as the provision of a homogeneous data collection method based on group discussions or in-depth interviews (Wright 1996). This method has turned to be useful for explanatory as well as for researches other than quantitative. Qualitative approach is selected as in this research there are more explanatory objectives which need understanding of the impact of technological innovations on the performance of the insurance industry.

Qualitative research emphasizes more on words rather than quantification in the collection and analysis of data (Bryman 2003). The research methods used for this study are primary research methods. Primary research is carried out with the use of qualitative research tools, which was in accordance to the objectives of the research.

3.2 Research Strategy
Research strategy is a most important part of any research project (Creswell 2003). Case studies provide a rich understanding of the context of the research and the processes being enacted (Morris and Wood 1991). To find the answers of the research questions, case study design was used because it helps in reliable and valid explanation of the variables under consideration (Yin 2009). The current research was centred around Lahore transport Company therefore; a case study research strategy was adopted. Case studies can be very worthwhile in exploring existing theories and a well-constructed case study enables a researcher to challenge an existing theory and also provide a source of new hypotheses (Saunders et al. 2009).
3.3 Sample and sampling technique

The target population for the current research was employees of Adamjee. Adamjee has expanded its operations in United Arab Emirates. In order to achieve the objectives of the study, data was collected from the employees holding top managerial posts and key posts in the Information Technology Wing of Adamjee Insurance Company Limited using a non-probability sampling technique called Purposive Sampling. Sample was selected using purposive sampling because of the limitation of time and to get the greatest insights in the problem. Twelve (12) participants were selected for the collection of data using purposive sampling technique based on their usefulness for addressing the specific research objectives. Demographic details like age, experience, position held by an employee at Adamjee is not disclosed in the research due to ethical considerations as all the respondents were assured of anonymity of their responses. According to Yin (2003) 6 to 10 cases, with replication logic, in aggregate would provide compelling support to make any sound conclusions.

3.4 Instrument of Data Collection

The data was collected from the sample using Semi-Structured Interviews. According to (Yin 2009) semi-structured interviews are often the best available qualitative tool to extract the key information from small number of interviewees. The interviewees were provided a list of questions which were formulated previously. Semi-structured interviews were conducted for the collection of data in order to have more flexibility and to dig deep into more important issues as any interview progressed. Response rate was 100% and each interview was twenty to thirty minutes long. All the interviews were conducted in the respective offices of the respondents. Permission was sought from every respondent to get an audio recording of their interview to keep as a record and all the respondents were assured that the record of their conversation will be destroyed after the research is conducted. Four participants refused to allow voice recording. So, their responses were noted down by hand during the interview. See annexure B for semi-Structured interview guide which was used to collect data from respondents.

Semi-structured interviews were also used as instrument of data collection so that the interviewees feel comfortable to provide information which is not the case in simply answering the questionnaire or structured interview. Semi-structured interview is a better available option in exploratory research design and when sample size is small (McNabb 2009). According to (Rubin and Babbie 2008) qualitative research helps to extract culturally specific information about the perspectives and social context of targeted population.

3.5 Analysis of Data

It is crucial to mention the approach adopted to analyse qualitative data (Saunders et al, 2009). For the purpose of data analysis in current research, the researcher used a version of content analysis. Many researchers Krippendorff (1980), Downe-Wamboldt (1992), Sandelowski (1995) and Gillham (2005) called content analysis a systematic research to quantify phenomena. Content analysis helped the researcher to provide clear evidences in research work rather than mixing up views of respondents with his personal opinions. The researcher made categories of all responses gathered for each question from the interviewees. All categories had been reviewed and assigned to relevant headings. The demographic information of interviewees had also been recorded. After categorization section researcher had presented results section of analysis of data. In the data analysis section researcher has provided excerpts from the interviews arranged in the categories. The collected data also had coherence with the review of literature.

3.6 Validity of the research

The relevance of validity in qualitative research is mostly dismissed due to the use of different measuring instruments by different people at different time (Creswell and Miller, 2000; Whitemore et al, 2001). However, qualitative research considers all differences as valuable information (Leedy and Ormrod, 2001).
The importance of innovation and technology, impact of technological innovation on business and service industry, impact of technological innovation on the performance of insurance industry and the use of technological innovations in Pakistan insurance industry, has been critically reviewed in the review of literature chapter. The context of study was clearly described in the Introduction chapter of the current research (see page). The sampling strategy was clearly described in this chapter. The semi-structured interviews were conducted to gather responses from the employees holding top managerial posts and key posts in the Information Technology Wing. Semi-structured interviews focus on a respondent’s point of view rather than making a generalization about human behavior (Mannix and Neale, 2005).

Owing to research ethics, only those semi-structured interviews were recorded in which participants allowed to record. However, whenever any participant declined the request to record interviews, key points from his interviews were noted down. The responses from interviewees were also consistent with the reviewed literature and relevant excerpts from transcriptions were also quoted in the data analysis chapter.

3.7 Reliability of the research
In qualitative research term reliability is used to test the quality of research work (Seale, 1999). Reliability should be the main factor while designing a study in order to judge the quality of the study (Patton, 2001). The researcher conducted two pilot interviews with two employees of Research and Development Wing of Adamjee Insurance Company Limited in order to remove any error(s). The researcher had also asked probe questions while conducting the interviews to keep the interview focussed and to ensure the reliability of the collected data. Creswell (2003) stated that responses collected through semi-structured interviews are highly reliable because here the interviewer has total control over the environment and respondents feel comfortable while discussing complex issues.

4. DATA ANALYSIS
4.1 Introduction
The data was interpreted and analyzed with the help of categories. These categories contained responses from the interviews of top level management and information technology professionals of Adamjee Insurance Company Limited. The data analysis follows the order of the questions asked in the interviews. All the respondents were numbered from one (1) to twelve (12). Due to ethical considerations the name of any of the respondent was not mentioned. Excerpts from their interviews are also mentioned herewith.

4.2 Major technological changes introduced by Adamjee in the past decade
It appears from the data collected through semi-structured interviews that Adamjee made rapid and far reaching changes in the field of information technology in the past decade. New products and software were introduced in the era along with up gradation of the previous ones. All the respondents held positive views and were highly satisfied by the technological changes introduced by Adamjee in the past decade. Adamjee also introduced operating systems and network connections that were latest in their time. According to respondent 9 and 3 “earlier, the operating system that we were using in our computers was Windows 95, then we shifted to Windows Millennium, after that we used windows xp and currently we are on the latest Windows 7... The introduction of ERP software by AICL was the most significant technological change we introduced in the past decade.”

In order to connect all branches with the head-office, the Information Technology Department of Adamjee had developed home-based software named General Insurance Software (GIS) which was later replaced by an internet based modern software named PREMIA in 2007. This new software is based on Enterprise Resource Planning application which is widely being used by corporations all over the world. This was the biggest step taken by Adamjee in the information technology sector in that decade.
From the data collected through respondents, it became evident that Adamjee took great strides in adopting new IT products, software, Operating Systems and shifted to ERP software system that helped Adamjee to increase its performance.

4.3 Enterprise Resource Planning Software
As Adamjee designed General Insurance Software (GIS) in 2003 and replaced it with ERP setup within a short span of four years, there were many reasons behind that change. Enterprise Resource planning software does the task of coordinating and integrating managerial information in the form of databases which could not be done with GIS. The new system was far better in its performance and made the tasks of its employee’s lot easier and facilitated the flow of information along all the branches. The ERP operates in almost real-time and does not rely on the periodic updates of the data. The data is constantly being uploaded in it as it is web-based software and provides a common database.

Respondent 11 said that, “very quickly we felt that the previous software was not working according to our needs and we shifted to PREMIA.” Respondent 9 said, “Soon we realized that a lot of effort is required in the transportation of data. Previously we encountered numerous problems and we were unable to standardize the data. In order resolve those issues we shifted to ERP setup.” Respondent 3 said, “The new system changed the outlook of the company as it was web based. Premia did the task of coordinating the branches with the head office and previously it was not done.”

From the data obtained from respondents it is evident that Adamjee is ahead of its many competitors in terms of technological products and software although it encountered numerous problems. The current status of technological innovations operating in Adamjee was a result of an evolving process in which Adamjee faced lots of problems and it appears that currently there is no problem relating to IT.

4.4 Research and development activities of Adamjee
Technology is largely considered as part of innovation and it is also observed that organizations manage their innovation needs through their research and development activities (Miles 2010). Adamjee has an independent department of Research and Development which is responsible for making feasibility reports of introducing any new product/software, extending the horizon of services to its customers and expanding the services to remote areas and in other international markets. This finding is evident from the excerpts of following transcriptions

Respondent 2 and 12 said, “We look for the present and future requirements of AICL. We look on the coverage and support benefits of our clients from time to time and according to the global trends.... It provides co-insurance facilities to the firms where the risk of loss is very high such as catastrophic loss, losses incurred due to floods or terrorist activities etc.”

In the past decade, Adamjee expanded its research and development activities and has launched other types of insurance policies including Home Insurance, Personal Accident, Kidnap & Ransom, Medical Insurance & various types of policies for Architecture, Engineering, Aviation and Power Generation organizations. From the information gathered through interviews it is found that main focus of R&D department is towards the expansion of services and expanding the horizon by keeping in view global trends instead of looking for the future needs of Adamjee in technology sector and the available technological innovations in the market.

4.5 Problems faced by Adamjee in information Technology Sector
After conducting interviews it was found that Adamjee faced a lot of problems in the technology sector in the past decade. However, with the passage of time, Adamjee took extra-ordinary measures in up gradation of its computer systems, network connection and software system to overcome these problems. This was done by investment in the IT sector and collaboration of all its departments.

Following excerpts from the transcriptions of interviews show that the problems faced by Adamjee included no backup of data and protection, data redundancy, problems in networking, and problems in providing wrong quotations to the clients,

“Obviously we cannot exclude data redundancy..... The network was very poor in the start of 21st century. At that point of time, all the branches had individual networking..... Often we had errors in the data when the
system was not centralized. When a client got a quotation from one branch and the same firm got quotation from any other branch, there were slight errors in the coding of that data.”

These problems were removed by establishing a disaster recovery centre in Lahore which is responsible for creating a backup of data, upgrading the network connection to a centralized microwave network, and introducing ERP setup.

4.6 Measurement of performance of IT products/ software
It is very difficult to quantify the benefit achieved through particular software in economic terms. This problem caught considerable attention of researchers in the 21st century. Adamjee has not developed any system at home or adopted from any other firm to measure the performance of IT products and software. Respondent 4 said “We, at Adamjee have no system of measurement of the output of the software and IT devices. I have not come along any measurement system of the performance or output of any software. We allocate certain amount of money for the IT wing including their salaries, which are responsible for the IT related things according to their needs each year, but as such we have no mechanism to measure their output.”

Two respondents held different views. According to them Adamjee did not invest in IT sector to generate revenue but to avoid problems and keep pace with the market. According to respondent 6, “We did not take all the measures to increase the performance of the users and the electronic devices but to avoid loss of data, as a precautionary measure.”

Respondent 3 stated that, “Whenever we are going to purchase any new software or IT product, we look more for the efficiency and not the monetary value. Definitely the amount of money we invest on IT products/software matters, but we look on the return or the benefit we get from the product or software. I think, organizations must be up to date in its IT products and software.”

4.7 Technological changes and the communication process
The IT products and software introduced by Adamjee significantly changes the modes of communication. Manual mailing system has been greatly reduced which was at one point of time the sole medium of communication. Respondent 1 explained why Adamjee still utilized manual mails in these words, “Where ever it is possible to communicate via electronic devices, the employees communicate through emails and phone calls. This is not always the case and sometimes our clients are not familiar with the electronic modes of communication and in that case we use old fashioned modes of communication that is by writing to them on paper and delivering those faxes.”

Respondent 7 stated the reason of using faxes and courier services instead of emails in these words, “There are numerous remote areas where internet facility is not available so it becomes impossible to communicate through emails. We cannot eliminate completely the use of manual communication modes as the society is undergoing and transforming changes and more and more people have internet facility. Often the data to be transported to other branches is in the form of bulk of pages and in that case it not possible to send it via email or fax, so we use courier service in that case.”

4.8 Technological changes and new marketing strategies
Keeping in view the rapid improvement in marketing strategies and enhanced competition in marketing activities regarding information technology, it is the need of the hour to enhance the speed of services in the market to maximum extent to fulfill the requirements of the patrons. Pakistan is a developing state and still the trading modes of marketing are very effective here. E-marketing is not in very much use in Pakistan.

Respondent 4 explained two marketing strategies by saying, “E-marketing does not fulfill the overall marketing demands of the firm. Other traditional modes of marketing are very much prevalent in Adamjee. As far as e-marketing is concerned, Adamjee has only developed a website that is updated regularly. Adamjee used to held tournaments like golf and polo in certain areas of Pakistan for its promotion but not used advertisements in news channels or magazines/newspapers.”
Electronic commerce can reduce cost significantly and improve performance to great extent so that they may resist minimal to adopt new technologies. (Moore and Benbasat 1991). Adamjee has very low marketing costs and is still reducing the financial burden incurred by in-efficient marketing strategies. Respondent 8 stated, “For the marketing strategy, we have improved considerably. Earlier we had no web page of Adamjee which we developed in 2007. A team of MIS regularly develops the website of Adamjee. Every new product is introduced on the website. We are extensively using website and media for promotion of our products and services. The expensive tournaments of Golf and polo are almost now come to an end. E-marketing is economical and bears the potential of informing clients all over Pakistan.”

4.9 Technological changes and clients’ loyalty
All the respondents had unanimous decision that Customer loyalty is highly increased by the IT systems and software. Interviewee 6 stated that, “PREMIA provides a standard operating system to all the clients. We have molded the global operating standards of PREMIA according to our needs. We have transformed it according to our own culture and made it more users friendly. Clients feel very comfortable in getting services from us through Premia. Our latest computer systems and software make them loyal to Adamjee.”

Respondent 12 also provided an overall positive view regarding IT products/software and their clients’ loyalty. According to him, “With the passage of time customer needs are evolving. We provide services to our customers according to their needs. We offer customized insurance policy to our clients and they can make amendments in the policy according to their needs. This has greatly Increased the loyalty.”

5. Conclusions
IT products and software are being used in almost every organization around the globe. The usage of IT products and software is more in the services sector as compared to the manufacturing organizations. These products and software are part and parcel of every organization now. Insurance industry increase their efficiency, productivity and customer base by using the IT software and products. Results of the study have displayed a positive relationship between technological innovations and performance of insurance industry. Adamjee is the leading insurance company of Pakistan and the performance of Adamjee is far more than other insurance companies operating in Pakistan. Adamjee is using latest IT software, networks and computing machines that many other insurance organizations are lacking.

Adamjee is holding a 38% market share because of a latest coordinating software known as PREMIA, hi tech micro-wave network connections, latest computers and other new IT software. Most of these changes were introduced by Adamjee in the previous decade including the software application PREMIA. Although Adamjee faced many problems in this period of transition, yet it is far ahead in terms of technology which is the reason of its high performance.

Competition in the insurance industry is becoming intense and the insurance companies better equipped with latest technological innovations will have more likelihood of sustaining the market competition. As in the modern technology era, it is perceived that only those insurance companies will survive in the future, those who are sound on technological grounds. (Shaukat Malik et al. 2011)

Adamjee has a very efficient Research and Development wing that conducts research activities in launching new policy programs, reducing the marketing costs through IT and keeping in view what major insurance companies of the world are doing. Traditionally, only R&D activities are considered by practitioners to be a major focus of innovation (Lau et al. 2010). The R&D activities have also helped Adamjee to capture such a big market share and increased the performance significantly.

Lastly, it is also concluded that the changes in IT should be introduced according to the prevalent market situations. Pakistan is a developing state and the societal needs still, sometimes, demands the traditional means of doing the things. Technological innovations definitely help an organization in increasing the performance if introduced according to requirements of the organization and needs of the customers.
5.1 Limitations & Recommendations

The current research work is not exempted from limitations. The first limitation of this research is that it was confined only to Pakistan and lacked cross-nation data sources. It prevented the researcher from getting conclusions regarding specific differences between countries. However, this study offers new insights into the problem. The current research was a case study and the results might not be generalizable to other insurance and service sector organizations. In order to increase the generalizability, future research should be conducted on more than one country.

The second limitation arises from the lack of specification in the operationalization of technological innovations, which limits our ability to differentiate among types of technologies that are innovative and that not innovative. Further it is very difficult to segregate the information technologies launched by an organization as a precautionary measure from the fear of loss with the information technologies launched to increase the performance. This can be a good area for any researcher who intends to do research on technological innovations and their impact on organizations.

Third limitation is that the current research is not longitudinal and lacks the rigor because of its cross-sectional nature. The impact of any technology introduced in an organization can be better understood while conducting a longitudinal study. Scholars emphasize the importance of longitudinal studies in understanding the management of innovation in organizations (Pettigrew 1990);(Van de Ven and Huber 1990). This opinion is particularly valid to this research as the innovation to performance relationship occurs over time. An organization’s success relates more to its history of innovation activity than to the introduction of certain new products or processes (Damanpour et al. 2009). So, launching a particular technological innovation at one point of time will not satisfactorily clarify the impact of innovation on organization performance over a period of time. In order to make the results of this study more generalizable, longitudinal research across various organizations or whole industry can be conducted.

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