

# The Moderating Effect of Religiosity on the Relationship between Technology Readiness and Diffusion of Electronic Commerce

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## Abstract

Developing states are severely in need of building up their electronic commerce for their economic survival on the globe. Beside other challenges, developing countries are lagging behind in terms of technology readiness (TR). Another leading factor, particularly within the practicing Muslim communities, is the impact of religiosity that has been unanimously found playing an immense role in buyers' buying attitude, judgment of product price and quality. Having an immense influence, religiosity affects both intra-personally and interpersonally. Furthermore, it shapes consumers' mind-set, learning and life style and is also considered as one of the significant factors with regards to hi-tech innovations adoption. This paper puts light on the moderating effect of the religiosity on the relationship between technology readiness and diffusion of electronic commerce, in the perspective of Muslim majority developing countries. While contributing to the field of knowledge, the study highlights the importance of technology readiness and trust in the diffusion process of electronic commerce. Looking into the moderating effect of religiosity in this regard, it underlines the unique features (completeness, universality, ever-greenness and applicability) of Islam including; its moderate approach toward latest technologies including e-commerce, thus boosting up electronic commerce trade. While, possessing the practical, educational and theological implications, the study will be helpful to all the stakeholders including; prospective consumers, governmental concerned authorities and e-commerce global community.

**Keywords:** diffusion, technology readiness, religiosity, electronic commerce

## 1. Introduction

Today, electronic commerce (EC) has massively revolutionized the business world by extending its enormous impact on the global society including; politics, survival of a common man and an overall attitude towards others. It has been growing very fast, As in the recent years, retail electronic commerce trade has reached at \$820.5 billion; increasing from 4.0% in 2008 to 6.5% in 2012 and is estimated to increase up to 9.3% by 2016, exceeding \$1 trillion (Devitt, et al., 2013; Siemer & Associates, 2013). In Europe, for instance, 2.2% share of the GDP is contributed by internet economy, it is expected to increase as double by 2016 and triple by 2020 (Nagelvoort, Welie, Brink, Weening, & Abraham, 2014). On the other hand, e-commerce has been facing many challenges in the developing states, in particular the Arab World (International, 2011). According to the fact and figure, Middle East and North African (MENA) region, contributing one of the lowest, is expected to grow 1.6% to 3.5% by 2016 (Fredriksson, 2013). Instead of having reasonably good technological infrastructure, the region is believed to be about five years lagging behind the USA in terms of electronic commerce business (Petermeijer, Verdonk, Balsfoort, & Zwart, 2015).

In the developing Muslim majority states, consumers are found unenthusiastic and unwilling buying over the internet due to numerous factors (Al Rawabdeh, Zeglat, & Alzawahreh, 2012; AlGhamdi, Drew, & Al-Ghaith, 2011), and lower level of technology readiness in their residents is one of the leading factors in this regard. Technology readiness refers to individuals' broader mindset and approach towards innovations or the latest technology (Parasuraman, 2000). It is a prerequisite and essential to boost up, predominantly in business to consumer (B2C) e-commerce. As a matter of fact, if buyers feel uncomfortable in using the technology, they would not be expected to perform e-commerce. Moreover, in the Muslim community, religion plays a very important role in buyers' actions. To Muslims consumers; religiosity is one of the principal and dominant phenomena that guides them whether or not to adopt a new product, an idea or a technology (Khraim, 2010;

Reitsma, Scheepers, & Grotenhuis, 2006; Yousaf & Malik, 2012; Rehman & Shabbir, 2010). This study aims to investigate the nature of relationship that exists between technology readiness and diffusion of e-commerce. Furthermore, it intends to investigate the moderating effect of religiosity on relationship between technology readiness and diffusion of e-commerce.

## 2. Literature Review

Turban et al. (2008) defines e-commerce as “a process of buying, selling, transferring or exchanging products, services and/or information via computer network, including the internet”. The emergence of electronic commerce has significantly changed human lives (Nanehkaran, 2013). It contains several distinct characteristics like; ubiquity, large-scale reach, worldwide standards, information richness and consistency, customization and personalization, cost saving and lesser payment time. Business-to-consumer (B2C) model of e-commerce bears the topmost contribution (Corbitt, Thanasankit, & Yi, 2003; Kamari & Kamari, 2012). Furthermore, it benefits businesses in the forms of increasing productivity, improved market share, finer consumer service, and faster product delivery (Watson, Berthon, Pitt, & Zinkhan, 2008; Khurana, Goel, Singh, & Bhutani, 2011). E-commerce has been also facing challenges like; insecurity, privacy, warranty and guarantee claims, marketing and logistics (Nanehkaran, 2013). Similarly, the developing have been facing issues like; meager infrastructure, socio-cultural and economic issues, awareness lower level of technology readiness (Lawrence & Tar, 2010; Pons, Aljifri, & Fourati, 2003; Al Rawabdeh, Zeglat, & Alzawahreh, 2012).

Technology readiness has four dimensions namely; “optimism, innovativeness, discomfort, and insecurity” (Parasuraman, 2000; Demirci & Ersoy, 2008). Technology readiness, backbone of electronic commerce practice, is a key to growing economies in the second stage of development and it ranks ninth in the list of leading national competitiveness pillars (Shih, Dedrick, & Kraemer, 2005; Ogreaan, Herciu, & Belascu, 2010). In terms of consumers’ overall perception, it is found that consumers’ perception regarding e-commerce varies person to person and place to place (Berndt, Saunders, & Petzer, 2010). For example; Lin and Hsieh (2007) highlighted three findings on the customers’ behavior when using self service technologies; the customers’ satisfaction level of self service technologies (SSTs) depend upon their respective level of technology readiness; the more intensity of technology readiness shows creates positivity in customers’ behaviors; and consumers are expected to pass recommendations within their community if they have gained more satisfaction themselves. An empirical study in this regard was conducted; two student communities, from different countries, were observed using technology readiness index (Parasuraman, 2000) to calculate their level of readiness and willingness to use latest technologies. The Chinese fellows were found suffering from higher level of discomfort and insecurity and lower level of optimism and innovativeness as compare to their American fellows (Elliott, Hall, & Meng, 2008). The following paragraphs put light on another potential factor i.e. religiosity in this regards; especially in the religious communities.

Religiosity has been widely used in different perspectives. Being synonymously used for phrases like; “religiousness, orthodoxy, faith, belief, piousness, devotion, and holiness”, but none of the mentioned phrases are similar in meaning to it (Holdcroft, 2006). Religion plays an important role in all aspects of our life including shopping behavior. Religiosity has been observed as a basis of trade dynamics i.e. quality notice, spontaneous shopping and price realization (Mukhtar & Butt, 2012). Religion itself supports to seek technological knowledge, to build trust in new technologies and to all the changes likely to happen if those are inclined with the teachings of Islam. Yousaf and Malik (2012) disclosed that consumers’ religiosity and product interest levels outstandingly influence different aspects of consumers’ approach. It is found, particularly in Muslim consumers, that religion plays an immense role towards diffusion of innovations i.e. novel idea or technology (Ansari, 2014). While, focusing on marketing strategies in Muslim majority consumers, Rehman and Shabbir (2010), Ansari (2014) and Hanzaee, Atar and Alikhan (2011) found a significant relationship between religiosity and new product adoption.

### 3. Conceptual Framework

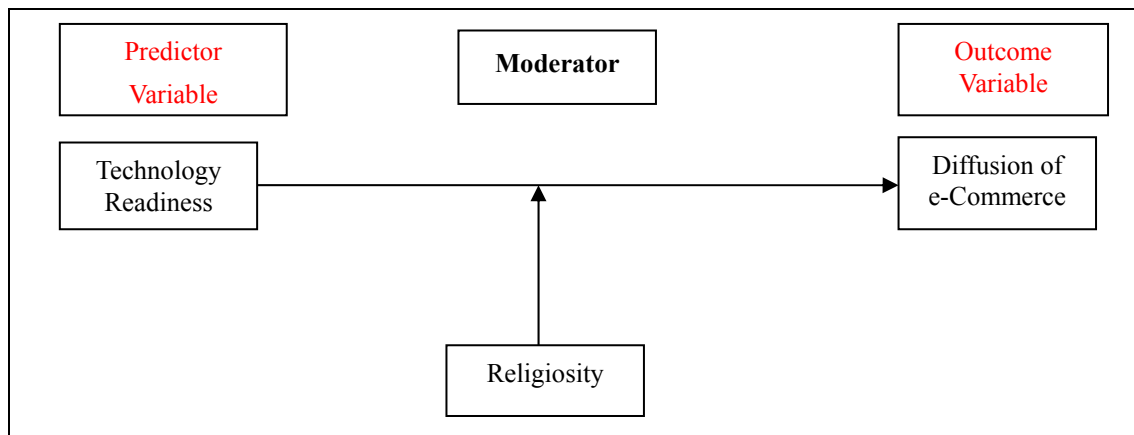


Figure 1. Conceptual Framework

### 4. Role of Technology Readiness in Diffusion of Innovation

Today, businesses are required to be updated due to the emergence of technology readiness in the consumers and because of the prompt nature of “electronic” marketplaces (Dada, 2006; Hosseinpour, Hajizadeh, Karimi, & Shariati, 2013; Bui, Sankaran, & Sebastian, 2003). Chinese e-commerce market suffered due to: insecurity, inadequate legal protection, distrust and poor logistic support (Shih, Dedrick, & Kraemer, 2005; Tan & Ouyang, 2004). Another research found skilled accountants as dispassionate towards “techno-ready” and “techno-resistant” towards up-to-the-minute technologies (Lai, 2008). Similarly, South African consumers, comparing to their American counterparts, were found hesitant doing banking over machines (Berndt, Saunders, & Petzer, 2010).

Two student communities (Chinese and Americans) were observed applying technology readiness index to calculate their inclination towards new technologies. As a resultant, the former group was found more dissatisfied and insecure and less optimistic and innovative as compare to American fellows (Elliott, Hall, & Meng, 2008). Interestingly, different levels of consumers’ technology readiness effect their cognitive and sentimental considerations on the latest technologies (Ferreira, Rocha, & da Silva, 2014). Lee (2001) investigated that it was not only the investment on the infrastructure, but the education and ability to properly access the technology required the most to promote e-commerce in the developing countries.

### 5. Technology Readiness and Electronic Commerce

Significance of technology readiness in the perspective of diffusion e-commerce is quite obvious. Recent studies (Caison, Bulman, Pai, & Neville, 2008; Son & Han, 2011; Abu-Assi, Al-Dmour, & Al-Zu’bi, 2014; Demirci & Ersoy, 2008) had found technology readiness model quite useful and applicable in studying consumers’ inclination accepting the new technologies including e-commerce. The phenomenon of technology readiness has been broadly studied in telecom sector, e-education, e-insurance and electronic commerce (Summak, Murat, & Mustafa, 2010; Massey, Khatri, & Montoya-Weiss, 2007). Lower level of the technology readiness has been observed as one of the main reasons of lower practice of e-commerce in the developing countries (Kraemer, Dedrick, Melville, & Zhu, 2006).

Islam supports E-Commerce, provided that Islamic teachings, business rules and regulations have been duly followed (Zainul, Osman, & Mazlan, 2004; Dali, Bin Harun, Bte Mohd Khalid, & Bte Abdul Hamid, 2004). We, as human beings, have been blessed with the best status among all other creatures, having responsibility to sustain with the superior position in all spheres of our lives (Sohaib & Kang, 2014).

### 6. Religiosity

Religiosity has been playing an immense role in people’s buying approach, opinion on product price and quality (Reitsma, Scheepers, & Grotenhuis, 2006; Yousaf & Malik, 2012; Rehman & Shabbir, 2010; Khraim, 2010). Considered as one of the main significant factors towards hi-tech innovations, it influences consumers’ mind-set, education and life style (Coccia, 2014; Fam, Waller, & Erdogan, 2002; Sohaib & Kang, 2014; Eid & El-Gohary, 2015; Khraim, 2010). In Muslim consumers, religiosity is one of the influential factors building their attitude towards the innovations (Rehman & Shabbir, 2010; Azam A. , Qiang, Abdullah, & Abbas, 2011; Ansari, 2014).

And WE (Allah Almighty) have certainly honored the children of Adam and carried them on the land and sea

and provided for them of the good things and preferred them over much of what WE (Allah almighty) have created, with [definite] preference (Al-Quran, 17:70)

Human beings, blessed with a complete and comprehensive dignity, are taught to accumulate and sustain their self-esteem in every aspect of life (Osman, 2001). Achievements made in any field of life, complying with the Islamic teachings, are counted as good deeds. Every Muslim welfare state is expected to provide prosperity to its citizens in every aspect (Gummi, 2013). Islamic teachings of innovativeness need to be duly highlighted in today's world. Since religiosity influences customs and the cultural values ultimately maneuver adoption or diffusion processes, the projected ideas, technologies in agreement with the cultural values, be given improved and earlier response in the public (Wejnert, 2002). A thorough literature review proposes a momentous influence of religiosity on the relationship between technology readiness and diffusion of innovations (Wejnert, 2002; Daniels & Ruhr, 2010; Muhammad & Muhammad, 2013; Azam A. , Qiang, Abbas, & Abdullah, 2013).

## 7. Methodology

This study suggests quantitative research design. Research design, a guideline and instruction for the researcher, helps in finding out the method for conducting specific research. It thoroughly directs the research in selecting the proper sampling technique, data collection instrument, management of instrument and an analysis of the data collected. Study objective aims to examine the relationships between the Technology Readiness and Diffusion of (B2C) e-commerce in the perspective of Muslim majority countries. Further, technology readiness is taken as independent variables and diffusion of e-commerce is studied as independent variable, while religiosity is taken as a moderator to examine its moderating effect on the relationships between independent and dependent variables. Descriptive in nature, it is termed as correlational study, as it illustrates the issues technology readiness and trust towards diffusion of e-commerce where examining the relationship between the prescribed variables.

This study suggests using survey method. According to Zikmund (1994) survey method is useful in elaborating a phenomenon and in looking for the reasons and ground of any specific action. As discussed by Neuman (1997), survey method is quite valuable and practical as it facilitates the researchers to gather data comprising on a large number of respondents in order to measure multiple variables and to testify multiple hypotheses. Few of the advantages of survey method include: access to large number of respondents, less costly to manage, and free from interviewer prejudice (Bryman & Bell, 2003; Sekaran & Bougie, 2010). Thus, it will be appropriate to employ survey for conducting the present study. According to Neuman (1997) unit of analysis is what is being studied for measurement of variable. Unit of analysis can be individual, group or organization (McDougall & Oviatt, 2000) depending upon the nature and context of study.

## 8. Underlying Theories

The above discussed framework is widely supported by the Rogers' theory of diffusion of innovation (DoI), technology readiness index and theory of reasoned action. Theory of DoI hold up theoretical background of diffusion of e-commerce, technology readiness is supported by the index i.e. technology readiness index (TRI) and theory of reasoned action carries out the concept of the religiosity in the framework.

Diffusion of innovation is the "the process by which an innovation is communicated through certain channels over time among members of a social system" (Rogers E. M., 2003). Information technology related studies have been widely employing diffusion of innovation theory (Slyke, Belanger, & Comunale, 2004; Prescott & Conger, 1995). For instance, Ho, Kauffman and Liang (2007) adopted the basic ideas of the DoI theory to signify drivers of the technology. DoI theory looks at five (relative advantage, compatibility, complexity, observability and trialability) well-known features of latest technologies to find out a general opinion of masses toward it (Rogers E. M., 1995; Rogers E. M., 2003). Numerous studies have been found investigating the supposed attributes (relative advantage, compatibility, complexity, observability and trialability) of the new technologies or innovations (Agarwal & Prasad, 1997; Moore & Benbasat, 1991; Lin, 2011). By and large, the first three features, out of five, are seen more influential in the past studies (Kraemer, Dedrick, Melville, & Zhu, 2006; Slyke, Belanger, & Comunale, 2004). And the acceptance of new technologies and ideas also depends on the consumers' technical know-how (Rogers E. M., 2003; Selwyn, 2003).

Technology readiness is an important tool to identify consumers' level of innovativeness, behaviors toward new technologies and an overall attitude. It tells about consumers' inclination towards up-to-the-minute technologies or innovation. Having lot of positivity and optimism in their minds towards technology, consumers are also seen concerned about the uncreative and barren use of the technology (Parasuraman, 2000; Son & Han, 2011; Caison, Bulman, Pai, & Neville, 2008). Technology readiness index has four dimensions: "optimism, innovativeness, discomfort and insecurity". Optimism shows consumers' improved control, flexibility and efficiency over the technology; whereas innovativeness deals with the tendency of technology leaders and pioneers. On the other

hand, discomfort and insecurity investigate believed lack of control, a sense of being besieged by the technology and distrust over the technology respectively (Abu-Assi, Al-Dmour, & Al-Zu'bi, 2014; Demirci & Ersoy, 2008; Tsiriktsis, 2004; Massey, Khatri, & Montoya-Weiss, 2007).

Theory of reasoned action (TRA), family unit of all theories, reveals that people's behavior is controlled by their belief, state of mind, and plan (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975; Ansari, 2014; Mukhtar & Butt, 2012). It further defines "behavior" as an optimistic or a pessimistic assessment of attitude and a formative aspect of intention (Davis, 1989; Zarrad & Debabi, 2012; Chatterjee & Ghosal, 2014; Sumarto, Purwanto, & Khrisna, 2012).

## 9. Conclusion

The study proposes an integrated framework (shown in Fig.1) by incorporating three distinct literature streams i.e. technology readiness, religiosity and diffusion of electronic commerce. It would provide a clearer picture of the significance of technology readiness and role of religiosity in diffusion of e-commerce process, to all stakeholders including; potential consumers, officials, global e-commerce community. Further it supports that innovative ideas, technologies or innovations, if uphold compliant with the teachings of Islam, receive better reception and acceptance. As a leading phenomenon, the moderating role of religiosity would be one of the key finding of this study. The outcome is anticipated to propose practical suggestions to all the stakeholders including; likely consumers, e-commerce global community, regarding the importance of technology readiness towards diffusion of e-commerce and the moderating role of religiosity. The final product will justify the broader spectrum and traits of Islam like; universality, applicability, ever-greenness and moderate teachings of Islam, toward new technologies including electronic commerce, thus advancing global e-commerce market. This study deepens the current body of knowledge by presenting a conceptual understanding on the relationships between technology readiness, diffusion of e-commerce and the moderating role of religiosity. For the future studies, the framework can be employed on diverse cultures.

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