Chapter 7 SUMMARY AND CONCLUSION

This chapter presents the summary and conclusions of this dissertation. It is divided into four sections: the results of the study as they relate to the research questions, the theoretical contribution which relates to the implications for academic research, the implications for practitioners and, the limitations and future research opportunities.

7.1 Research Questions

This dissertation focused on developing and testing an integrated model of information system success that can advance our understanding of a user’s evaluation of information systems particularly the evaluation of e-Commerce systems. This research also provides guidelines to managers of e-Commerce firms to manage the user’s assessment of their systems more effectively.

The DeLone and McLean Information System success models, the User Experience research, and the Media Richness Theory (Daft & Lengel, 1986) were integrated to develop a model that tested the user’s evaluation of an e-Commerce system. The antecedent variable of socialness (rooted in the Media Richness Theory) was added to the existing measures of system quality, information quality and service quality used in the DeLone and McLean’s (2004) models. The dependent variable of User Experience was added in place of the User Satisfaction variable (which is used in the traditional DeLone and McLean models) to incorporate the higher order needs of contemporary Information System use (Deng et al., 2010; Jordan, 2000). The
model was tested using a cross sectional survey of 349 e-Commerce users using the Partial Least Squares method.

We first discuss the major findings in the context of the research questions and we then discuss the theoretical and practical implications of this study.

**RQ1. How does interaction with the e-Commerce system impact the user at an experiential and hedonic level?**

We measured the impact of an interaction with an e-Commerce system on a user’s experience with the system and found the impact to be highly significant. A majority of studies based on the user’s evaluation of e-Commerce system in the past have only focused on the utilitarian value of the system and have neglected the experiential and hedonic benefits that the user desires from the system use (Junglas et al., 2013). This study focused on examining the hedonic and experiential impacts of system use by incorporating the variable of User Experience in the DeLone and McLean’s model for Information System success.

The usability and functionality of information systems have now become a basic expectation from the system providers and are no longer considered augmentations. The user evaluation frameworks should therefore, also focus on measures that evaluate systems beyond usability or utility alone and incorporate higher order needs of the user like the hedonic and experiential benefits derived from the system use (Jordan, 2000). It can be stated, based upon the results of this study, that the system interaction impacts the user on an experiential and hedonic level.

**RQ2. How do System Quality, Information Quality, Service Quality and Socialness of the e-Commerce system impact its User’s Experience?**
The antecedent variables of System Quality (general system characteristics), Information Quality (the quality of content), Service Quality (service elements of the website interface) and Socialness (social cues that emanate from system use) were found to have significant effect on the User’s Experience with the system. This suggests that the end users of e-Commerce systems consider the hedonic and social system features along with the utilitarian features as important factors for the positive evaluation of systems.

**RQ3. How does User’s Experience impact the e-Commerce System Usage?**

The results of this study suggest that the User’s Experience with the system positively influences the system usage. Thus, a combination of utilitarian, hedonic and social factors explains the user’s system usage and the continued intention to use the system in future. The Information System Success research therefore, needs to broaden its scope and incorporate the hedonic and social factors into the existing utility based measures to better explain the user’s evaluation of contemporary Information Systems like the e-Commerce systems.

**7.2 Theoretical Contribution**

The major contribution of this dissertation is that it provides a theoretical and empirical argument to measure IS success from a holistic point of view whereby the hedonic, utilitarian and social elements of contemporary Information Systems are included and empirically validated in a comprehensive framework. Figure 7.1 depicts the variables used in this study that measure the hedonic, utilitarian and the social features of a system. The variable of User Experience is inclusive of hedonic and experiential measures. The social element of the Information System is measured as
the Socialness variable, while the utilitarian features of the system are measured in terms of System Quality, Information Quality and Service Quality.

This comprehensive perspective to determine IS success provides new conceptual resources to IS researchers in terms of the newly added dimensions of User Experience and Socialness and helps us understand the multiple facets of contemporary information systems.

From a conceptual view point, this dissertation has advanced our understanding of Information System success especially with regard to how users evaluate and perceive the Information Systems. This research has brought together

![Figure 7.1 Elements of Information System Success](image-url)
various elements of existing research work, concerning the contemporary IS characteristics and the user’s holistic evaluation of such characteristics to answer the research questions raised in this study.

The research questions dealing with user’s system evaluation at an experiential level, the impact of contemporary Information Systems’ characteristics on Information System success have been answered in the affirmative based upon the empirical evidence provided in this dissertation.

This study provides an understanding of how system characteristics affect User’s Experience with a system and how the User’s Experience influences the System Usage in the context of an e-Commerce system. In so doing this study has achieved the research objective of offering a more holistic and comprehensive model compared to the prior studies in the literature.

This dissertation has extended the DeLone and McLean IS Success Model by taking into its realm the concepts of User Experience and Socialness which was done by drawing upon and weaving together strong theoretical bases of the DeLone and McLean models, the User Experience research and the Media Richness Theory respectively. As such this dissertation combined prior relevant literature from the IS and related areas to extend and contribute to the existing body of knowledge in the IS literature.

We have included the variable of User Experience by incorporating it within the DeLone and McLean IS Success Model. The new experiential economy demands that the earlier service based focus should also incorporate an experience based focus. The user of technology today seeks to derive value from technology which extends well beyond the mere functionality of the technology and affects the user at a higher
experiential level (Jordan, 2000). Such an evaluation will help researchers better understand and measure user attitude towards technology and their use of such technologies.

The findings of this study are a significant contribution to our understanding of the concept of User Experience. A number of studies in the recent literature on Human Computer Interaction have focused on User Experience, presenting comprehensive and diverse measures for the construct of User Experience (Hassenzahl & Tractinsky, 2006). User Experience emanates from a user’s interaction with a system. However, what happens during this interaction is not fully explained by researchers and hence studies have rarely focused on comprehensively explaining the antecedents of User Experience. In this study we empirically established the relationship between system characteristics (in terms of System Quality, Information Quality, Service Quality and Socialness) and the resulting User Experience.

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An important contribution of this study also comes from the way User’s Experience with the system is measured. This study employed the survey method to measure the User’s Experience with travel websites in a real life environment without any intervention of the researcher during the reporting. Vermeeren et al. (2010) have emphasized the need to explore User’s Experience with a system whereby the participants are engaged in their daily life activities and hence the measurement is un-obstructive. This emphasis on un-obstructive measurement is important because User’s Experiences are dependent on the user’s internal states and it is important to collect data in the real context of use (Vermeeren et al., 2010).
The conceptual foundation of the User Experience variable is also further enhanced in this study by empirically establishing its validity within the DeLone and McLean models. The empirical evidence provided in this study suggests that the User’s Experience with a system measured in terms of cognition, sense and affect, is influenced by system characteristics suggested by the DeLone and McLean Models and the social cues emanating from the use of a system. This study therefore has contributed to further our understanding of the construct of User Experience of the IS.

The addition of Socialness of a system as an antecedent variable is another important contribution to the DeLone and McLean (2004) Model. In recent years, there has been a focus on creating technology that caters to the needs of the individuals as social beings (Junglas et al., 2013). The contemporary Information Systems have only recently developed this capability of fulfilling the social needs of their users mediated by technology. A utilitarian focus of user evaluation has served its purpose well while the users of technology also only sought utility from system use. In the wake of new technology transforming the user base and the motivation to use technology, fulfilling the need for socializing should be emphasized as well (Junglas et al., 2013).

The effect of social influence on shopping behavior in the online context is less explored, in comparison to the offline context (Kim et al., 2013). While, technology acceptance research has largely incorporated social characteristics, there is a lack of social variables in the IS success research based on the DeLone and Mclean Models (Petter et al., 2013). This view is echoed in the work of Junglas et al. (2013), who contend that the long standing view of system users as solitary information processors should give way to users being viewed as social beings that indulge in and
seek social interactions with others. Because social interactions are one of the intrinsic needs of users, they are as important as usefulness in predicting intention of use (Junglas et al., 2013). Therefore, this research contributes to the existing body of knowledge on system success, by adding the antecedent variable of Socialness, and establishing its validity in the empirical analysis. The significant positive effect of Socialness on the system success variables supports the claim made in this study that e-Commerce systems need to incorporate social cues in addition to the usability features in order to be successful.

This research study applies deductive logic to arrive at an incremental contribution to existing theories. The incremental contribution comes from integrating models of usability (DeLone & McLean, 2004) and hedonism (Csikszentmihalyi, M., & Csikszentmihalyi, I. S., 1992; and Hassenzahl & Tractinsky, 2006). Further, the link between the two concepts of usability and Socialness of the system is supported using the Media Richness Theory (Daft & Lengel, 1986).

The theories incorporated into our research model are well established and widely explored in their research domains and have produced a large body of knowledge. As noted by many researchers, the earlier models of user acceptance like TAM did not capture the hedonic aspects of Information Technology (IT) acceptance (Wang & Scheepers, 2012). The evaluation of IS needs to be more inclusive of dimensions that may not be purely utilitarian but are also important factors leading to the adoption and continual use of IS.

In summary, this study has established a link between the utilitarian system characteristics and the resulting Users’ Experience, in the context of travel websites.
We have also demonstrated that technical system characteristics measured as System Quality and Information Quality as well as the relational elements measured as Service Quality and Socialness affects User’s Experience with a system. Furthermore, the study also validated the positive effect of User Experience variable on System Usage. System Usage is critical for the Internet based services like e-Commerce in order for them to generate revenues and sustain their business (Bhattacherjee, 2001a and b; Flavian et al., 2006). The focus on recreational and social aspects of IS has found support with many researchers, for example, Kao et al. (2007) and Kim (2002). This dissertation, therefore, contributes the IS success research keeping in mind the proliferation of technology use into the daily lives of users and a shift in the user base of the IS from technically qualified users to ordinary households.

The research model validated by this study provides an understanding of the construct of User Experience, which can help IS researchers produce more systematic analysis of e-Commerce websites. Although primarily used to measure system success of travel websites, the model described in the study, which was based on travel websites, can be extended to other virtual products such as, e-Banking, digital music or e-Brokerages.

7.3 Implications for Practice

The user base of Information Systems has shifted from the organizational user to home user or public (Petter et al., 2012). This shift necessitates a focus on IS aspects that look beyond utility, towards a more experiential and hedonic focus (Hassenzahl & Tractinsky, 2006). The IS of today should focus on the positive psychology as argued by Seligman and Csikszentmihalyi (2000). This view of
wellbeing can also be emphasized by Information System providers, the view that focuses on creating outstanding experiences rather than avoiding usability issues alone (Hassenzahl & Tractinsky, 2006).

The research model presented in this study provides an understanding of the whole of the human need rather than focusing on only one aspect. The focus on utilitarian, social and hedonic needs of the user is an important learning for firms that design and provide Information System services to their users. The hedonic quality of Information Systems is important because it fulfils an intrinsic human need of growth, perfecting one’s own skills and of being stimulated (Hassenzahl & Tractinsky, 2006). Contemporary Information System use also leads to the fulfillment of socializing needs of users (Wakefield et al., 2011). Contemporary Information System providers should therefore, understand the importance of focusing on all these elements of a user’s needs and thus provide a means to fulfilling the whole of the user’s needs.

This research study provides insights on how a user’s experience can influence the system usage of an e-Commerce website. The research model suggested in this study can be employed by e-Commerce firms to determine the system usage intention of their users. The research model developed in this study captures the general characteristics of e-Commerce websites dealing in virtual products like online travel, e-Banking, e-Brokerage, e-Books etc., combining hedonic, social and utilitarian benefits of a system. The results of this study have established the importance of incorporating experiential, hedonic and social cues along with the utilitarian features within the e-Commerce websites. The more enhanced the users’ experience with a website, the more they will use the website. System usage will in turn lead to customer loyalty (Bhattacherjee, 2001a, b, Deng et al., 2010). Customer loyalty is
critical for an e-Commerce firm in order to stay in business (Gommans, Krishnan, & Scheffold, 2001).

This research study has implications for the design of the system. The designers of contemporary IS should take this up as a design opportunity, that deals with the interplay between functionality and pleasure. The antecedents of user experience variable identified in the research are either system characteristics or enabled by system characteristics. For example, the socialness of the website is enabled by having product reviews, links to social networking sites or user forums. The scale items developed in this study for various system characteristics can be used as criteria, to pre-assess the system characteristics that an e-Commerce firm should stress before designing an e-Commerce website. Based upon the system characteristics emphasized in this study, business managers and system designers can use these system characteristics as guidelines to design effective and successful e-Commerce systems.

The factors measured by the antecedents variables used in our research model can be used by practitioners in order to understand the users’ experience with their website offerings over time. The research model developed in this dissertation can be used by business managers of e-Commerce firms as a basis for evaluating their service as it categorizes the system characteristics and specifically measures each system dimension in terms of various scale items. As such, the research model developed in this dissertation can help business managers to pin down discrepancies if any in their e-Commerce system. The findings of our study indicate that an e-Commerce firm should design a website that provides both utilitarian and experiential benefits for the user by incorporating the dimensions of system quality,
information quality, service quality and socialness in the website. From among these factors, our results indicate that service quality seems to have the largest effect on the User’s Experience with a system.

Further, the empirical results of this study indicate that the interactive and customized features of the system displayed a low communality value with the other items of system quality like ease of use, security of transactions, seamlessness of the website across operating systems, devices etc. Because the survey was designed to measure the actual experience of a user with a particular website, the results reflect upon the actual performance of the e-Commerce website. The results therefore, are an indication that the interactive and customized features of the travel website in India are either not as good as the other features or are not valued as much as the other features of that website. This finding needs to be further investigated to bring out the issues that the system might present its users with.

The results of the study provide evidence that enhancing users’ experience with the system will lead to increased system usage of the e-Commerce system. To achieve repeated system usage, e-Commerce firms should focus on enhancement of users’ experience by incorporating not only utilitarian features but also focusing on features that enhance social cues. Thus, the findings provide useful information to e-Commerce firms to better understand the users’ response to the interaction with the website and help them identify the strategies to be employed in order to enhance experiential benefits of the system.
7.4 Limitations and Future Research

There are many theoretical and methodological limitations of this study that create some future research opportunities. The participants in the study responded to the survey using a self-report method which related to their past experiences with travel websites. This means that the validity of self-reports is an issue (Berendt, Günther, & Spiekermann, 2005 and Simonson, Carmon, Dhar, Drolet, & Nowlis, 2001); and is especially true for experiential measurements (Castañeda, Muñoz-Leiva, & Luque, 2007). In general, the longer the history, the less accurate will be the information provided. This study supports the conceptualization of User Experience as cumulative over time (Verhoef et al., 2009). This means that the experiences measured represent a generalized evaluation of various interactions that the user has had with the system (Rose et al., 2012). Therefore, a second round of a subset of the original survey was administered to a randomly selected set of respondents who had earlier responded to the original survey the only difference being that the respondents would take the survey immediately after transacting with a travel website. These respondents were given a period of one month for the survey. If they interacted with the travel website within this month, they were required to answer the survey immediately after their transaction with the travel website was over. A t-test of difference of means among the responses to the original survey and the second round of survey indicated no significant difference between the two experiences. For details see Appendix H. This was done to assess if the responses differed if the time lapse between the last transaction and the survey is reduced significantly. As such the repeat survey served as a check to measure the recency effect of the interaction. As such, the possible issues that creep up due to a post-hoc evaluation instead of an experiential
setup do not pose a threat to the validity of the results of this study. However, future research can focus on longitudinal studies that capture the construct of user experience over time. Future research on user experience may employ both an experimental and a post hoc evaluation to understand if the respondents significantly differ in their evaluation of experience when provided with an experimental setup versus a post hoc survey evaluation.

Second, the study focused only on travel websites where there is no physical product and therefore, the physical delivery aspect of the service was not considered. This was done because this study was scoped to the interaction through the web interface alone. However, the physical delivery aspect of e-Commerce service is very important for the growth of the e-Commerce industry (Xing & Grant, 2006). The logistics involved in physical delivery of products has posed many challenges to e-Commerce firms such as small order size, increased daily order volumes, small parcel shipments, information asymmetry and same-day shipments which need to be addressed (Cho, Ozment & Sink, 2008; Lummus & Vokurka, 2002; Rabinovich & Bailey, 2004; and Xing & Grant, 2006). The issue of physical delivery is even more complicated in developing countries like India where the logistics infrastructure is not uniform throughout the country, with major cities being far ahead in terms of logistics infrastructure as compared to smaller towns and rural areas. Even though the measures used in the study can be implemented in other self-service websites, generalizability across other product categories especially the ones involving physical delivery of products might not be possible. Future research can focus on the aspect of physical delivery as an extension to the model suggested by this study. Further, the physical delivery issues specific to developing countries can be explored in future research.
Third, the study only focuses on the user’s experience of existing users of the travel websites and ignores non-users or past users who might have abandoned the websites. Therefore, there is a possibility of bias in the study. As such, a comparative study evaluating the User’s Experience of users versus non-users or earlier users who have now abandoned the website might be a good area to explore in future.

Fourth, the study evaluated the impact of user experience on system usage. There might be other extrinsic or intrinsic motivations that determine system usage. Therefore, inclusion of additional factors apart from user experience could improve the understanding of system usage and might also lead to an improvement in the explanatory power of the model developed in this study.

In conclusion, this dissertation provides a valuable and empirically tested research model to evaluate an e-Commerce system. Based on the DeLone and McLean models, this study proposed a research model for measuring e-Commerce system success. The research model developed in this study focuses on both the utilitarian and hedonic aspects of system success based on a user’s perspective. As discussed in this chapter, the findings of this dissertation provide various theoretical and practical implications. In terms of theory, this dissertation has extended the work of DeLone and McLean by including the social and experiential constructs within the DeLone and McLean model which was not addressed by prior literature. In terms of practice, this dissertation suggests that managers should pay attention to system characteristics that enhance a user’s experience with a system. This may help their organizations to design systems that meet their user’s expectations and therefore create a loyal customer base. This study enhances our understanding of Information
Systems’ success and the factors that lead to it. It also sets the stage for future research that can further investigate the issues raised in this dissertation.