Chapter 2 LITERATURE REVIEW

The primary goal of this research was to study how e-Commerce firms are shaping and influencing the User Experiences generated from the users’ interaction with the e-Commerce system. The IS literature was explored to arrive at the research streams that are relevant for this study. This chapter presents the theoretical background of the study and the relevant literature pertaining to the variables employed in the research model presented later in Chapter 3.

Specifically, the research stream pertaining to IS success was reviewed to arrive at the antecedent variables of User Experience and System Usage. Several important antecedents of User Experience and System Usage were explored. In particular, the DeLone and McLean IS success models proposed in 1992 and 2003 were used to arrive at the antecedent variables. In addition, the ‘Socialness’ dimension of the e-Commerce system, that measures the ‘social cues’ emanating from the e-Commerce website interface, was used as an antecedent variable for predicting User Experiences generated from the e-Commerce system interaction. The variable ‘User Experience’, derived from the HCI research stream, was examined and its relevance as a dependent variable was established.

This chapter is comprised of three main sections. The first section deals with the review of Information Systems literature and the conceptual scope of the study. A brief history of and the important research streams in the IS literature are discussed in this section.
The second section focuses on the IS success research and also the HCI research pertaining to the concept of User Experience. The rationale of employing User Experience as the dependent variable was also established in this section.

The third section reviews literature pertaining to the individual variables used in the research model presented in Chapter 3. Studies that have focused on these individual variables have been discussed in this section. Finally, the research gap and research questions are discussed in detail based upon the literature review discussed in this chapter.

2.1 Conceptual Scope of the Study

The IS research has undergone a sea change in the past few decades and it has matured into a well developed body of knowledge (Banker and Kauffman, 2004; and Lee, 2010). Many studies have attempted to classify the research approaches applied by IS researchers over the years. Avgerou (2000) classified IS research based on the conceptual approaches and identified four most influential theoretical paradigms. These four theoretical paradigms are:

- **Systems Theory** which attempts to break down problems into simpler elements. The models in systems theory are used to conceptualize society and organizations,

- **Organizational Rationalism Theory** is concerned with the optimization of IS resources for surviving and thriving in the market economy,

- **Structuration Theory** views IS as a relational exchange between technology, social change, and the organization, and
• **Critical Theory** questions the original IS research and practice. The critical theory in IS advocates the use of concepts derived from social sciences for explaining phenomena related to the IS research.

Banker and Kauffman (2004) reviewed the development of the IS literature in terms of its inception, growth, and maturation. Banker and Kauffman (2004) classify the IS research into five research streams based on the levels of organization, methodological paradigms, theoretical perspectives and managerial implications. At the highest level Banker and Kauffman (2004) consider the IS research stream as a subset of the Management Science research. Banker and Kauffman (2004) classify the IS research into five research streams namely Human Computer Interaction (HCI), Design Science, Value of Information, Economics of IS and Information Technology (IT), and IS Organization and Strategy. The following section describes each of these research streams in terms of its theoretical foundations and its related disciplines based on Banker and Kauffman’s (2004) classification:

i) **Human Computer Interaction (HCI) Research**: The HCI literature deals with the study of the ways that humans interact with information, tasks, and technology in various contexts like organizational, managerial, cultural, and business (Zhang, Benbasat, Carey, Davis, Galletta, & Strong, 2002). The theoretical base of HCI research is derived from the cognitive and behavioral decision theories. The HCI literature is based on knowledge obtained from design science, decision science, and cognitive psychology.

ii) **Design Science Research**: The design science research involves “learning through the act of building” (Kuechler & Vaishnavi, 2008). Design science deals with the
creation of things that fulfill human needs (Peffers, Tuunanen, Rothenberger, & Chatterjee, 2007). This stream of research derives from the theoretical base of network optimization, control theory and the decision theory. The related disciplines of design science research include operations research, economics, marketing, computer science, and strategic management.

iii) Value of Information Research: The value of information studies focus on the business value of information technology and the link between information technology investments and the outputs thereof (Mooney, Gurbaxani, & Kraemer, 1996). This research stream focuses on the individual decision makers, firm actions in the market context, and on the technologies in the business process context. The theoretical foundations in the value of IS research stream are based on information economics, information sharing theory, and the real options theory. The related disciplines of value of information research include decision science, risk management and economics.

iv) Economics of IS Research: The Economics of IS research emphasizes the application of economic theory and methods to the issues related to the IS and information technology (Varian, & Farrell, 2004). This stream derives from the theoretical base of the contract and incomplete contracts theory, game theory, network externalities, production economics and the theory of firm. The related disciplines of economics of IS research are economics, strategic management, computer science, and strategic management.

v) IS Organization and Strategy Research: The organization and strategy research focuses on the structured decision making in the organizational context (Ives,
The theoretical base of this stream is derived from diffusion theory, resource based view of firm, transaction-cost economics, information success model, media richness theory, and the technology acceptance model. The related disciplines of IS organization and strategy research are organizational theory, social psychology, cognitive psychology, economics and strategic management.

Gregor (2006) succinctly puts forward four important questions for organizing studies related to a body of knowledge (including IS) namely i) **Domain Questions:** relating to the core issues and boundaries of the discipline, ii) **Ontological or Structural Questions:** relating to the nature and composition of and the questions addressed by the theory, iii) **Epistemological Questions:** relating to how the knowledge is acquired and tested, and iv) **Socio-political Questions:** relating to the stakeholders’ perspective of the knowledge from a human backdrop. Further, Gregor (2006) states four primary goals of the IS theory in terms of its taxonomy namely analysis and description, explanation, prediction, and prescription. According to Gregor (2006), the structural components of any theory in IS, are: i) **Means of representation** i.e., how theory can be represented in terms of symbols, mathematical terms, tables or graphs ii) **Constructs** i.e., the phenomena of interest, iii) **Statements of Relationships** i.e., the relationship among constructs and iv) **Scope** i.e., setting the boundaries for generalizations.

**Research Streams and Structural Components Used for this Study**

In terms of the five research streams suggested by Banker and Kauffman (2004), this dissertation was based on the IS Organization and Strategy stream and the
HCI stream. As can be observed from Figure 2.1, the IS system success literature and media richness literature were reviewed to arrive at the independent variables employed in this study, whereas the HCI literature was reviewed to arrive at the main dependent variable of this study.

![Figure 2.1 Major Theories Used in the Study](image)

The IS theory classification suggested by Gregor (2006) was used to generate the conceptual scope of this research (see Table 2.1). In terms of the theory type suggested by Gregor (2006), this research deals with both the explanation and the prediction of a phenomenon. This study focused on the explanation of User Experiences generated from an interaction with the e-Commerce system. Further, the
User’s Experiences resulting from the interactions with the system is predicted with the help of an empirical model developed in Chapter 3. The primary constructs and their relationships are also depicted in Table 2.1. The subsequent sections in this chapter will discuss the theories that form the basis of our research study.

Table 2.1 Conceptual Scope based on Gregor (2006) typology

<table>
<thead>
<tr>
<th>Theory type: Explanation and Prediction</th>
</tr>
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<tbody>
<tr>
<td>This study focuses on the antecedents of User Experience of a system. It builds on DeLone and McLean (1992, 2004) IS success model and User Experience research. A predictive model is employed to understand the relationship between the antecedent and dependent variables</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Theory Component</th>
<th>Demonstration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Means of representation</td>
<td>Diagrams, Words, Tables</td>
</tr>
<tr>
<td>Primary constructs</td>
<td>System Characteristics, User Experience, System Usage</td>
</tr>
<tr>
<td>Statement of relationships</td>
<td>Associative. The independent variables of System Quality, Information Quality, Service Quality, and Socialness are considered antecedent to User Experience</td>
</tr>
<tr>
<td>Scope</td>
<td>The results of this study can be generalized not only to travel websites but also other e-Commerce systems that deal with digital products and services.</td>
</tr>
<tr>
<td>Associative explanations</td>
<td>Yes. Five hypotheses were stated to test the theoretical model</td>
</tr>
<tr>
<td>Testable propositions</td>
<td>Yes. The theory was tested through statistical methods</td>
</tr>
<tr>
<td>Prescriptive statements</td>
<td>Recommendations for practice and future research are provided</td>
</tr>
</tbody>
</table>

2.2 Theoretical Background

Thus far, IS research has mostly focused on success metrics for a system based on human (employees), organizational, and technical factors (Petter, DeLone & McLean, 2013). The proliferation of the IS into the daily lives of people, who may not be highly trained users of technology, has made it imperative to define IS success in
terms of how these users perceive the IS and its use. The use of experiential measurements to evaluate the IS from a user’s point of view has also been emphasized by researchers who suggest that experiential measures provide a holistic evaluation of the IS under consideration (Väänänen-Vainio-Mattila, Roto, & Hassenzahl, 2008). Experiential measurements are by no means new to the field of IS, as they have been much explored in the Human Computer Interaction (HCI) research stream (Hassenzahl & Tractinsky, 2006). However, there is a lack of employment of experiential measures in the IS success research (Petter et al., 2012). Therefore, it is suggested that an IS success evaluation should also incorporate experiential measures.

Many studies have established that highly interactive systems affect people at the subconscious levels (Vermeeren et al., 2010). A growing interest on the social influence of these interactive IS also warrants further investigation (Rose et al., 2011). This dissertation aims to bring together the utilitarian (IS success metrics) and the non-utilitarian (Socialness of the System and User Experience) measures to create a holistic model that looks at user interaction and the resulting User Experience with the IS.

2.2.1 IS Success Research

Measuring IS success is a critical issue in the IS research (Sabherwal, Jeyaraj, & Chowa, 2006) and has been a widely researched area in the IS literature (Rana, Williams, & Dwivedi, 2012). Myers (1995) reviewed literature based on IS implementation and success, and noted that there are two major streams of IS success research namely Factor Research and Process Research. The factor research stream focuses on identifying the factors that will lead to the system implementation success, whereas the process research looks at implementation success as a successful
exchange or relationship between the system designers and the system users. The factor research has been the most dominant among the two streams. Further, there have been two major approaches or frameworks within the factor research stream which are the DeLone & McLean System Success models and the Work System Success (Lawrence et al., 2012) model.

DeLone and McLean (1992) proposed six variables of IS success: System Quality, Information Quality, Use (System Usage in this study), User Satisfaction, Individual Impact and Organizational Impact based on literature review of 100 empirical papers. Alter (1999) suggested a continuous goal based success metric called Work System Method (WSM). The WSM model depicts a systems view of work with inputs, process and output where IT is considered a facilitator of the business environment. However, DeLone and McLean models are the most widely cited IS success models (Agourram, 2009) and therefore used as the theoretical base for this research. The original model suggested by DeLone and McLean was tested and verified in many empirical studies (Rai Lang, Welker, 2002; and Sabherwal et al., 2006) and is thus considered for analysis in this study.

The DeLone and McLean models are the most commonly cited models in IS success research (Crowston, Howison, & Annabi, 2006; Dorobat, 2014; Halawi, McCarthy & Aronson, 2007; Wu & Wang, 2006). Researchers have suggested that the DeLone and McLean models have made significant contributions to the understanding of Information System success. The DeLone and McLean models provide a well organized scheme or basis for categorizing the vast number of IS success measures developed in the IS literature (Dorobat, 2014). They also propose
the temporal and causal interdependencies among the various groups of IS success measures (Dorobat, 2014; McGill, Hobbs & Klobas, 2003).

A number of studies that have focused on e-Commerce evaluation and the individual level evaluation of Information Systems have used the Technology Acceptance Model (TAM) proposed by Davis (1989). Although dominant and influential, the major purpose of the TAM was to predict the adoption of new technologies based on user’s perception (Eom, Ashill, Arbaugh & Stapleton, 2012). This study aims to understand user’s evaluation of Information Systems based upon a comprehensive measure that focuses on the elements of the interaction between the user and the system, the resulting experience and the influence of the experience on the outcome i.e. System Usage. The goal of this research therefore, is to develop a comprehensive measure for user’s evaluation of a system that covers the dimensions of utility, hedonism and social aspects of the system. It is possible that a conceptualization of user’s evaluation based upon technical characteristics of the system and the consequent user evaluation, such as the one suggested by DeLone and McLean models is more appropriate for this study.

Benbasat and Barki (2007) suggest that researchers need to consider more than what they term as the “perceptual belief-based” measures and also employ objective measures like the system characteristics suggested by the DeLone and McLean models. Petter et al. (2008) suggest that although acceptance of technology is critical to success, acceptance is not equivalent to success. As such, success is more comprehensive in measurement than technology acceptance. The DeLone and McLean models dimensionalize the technical characteristics of the system beyond ease of use and usefulness and also measures the outcomes more comprehensively than the adoption of technology (Eom et al., 2012). Although, TAM is an important
and highly effective model for understanding the user’s evaluation of an Information System, this research in particular focuses on measures beyond the ones incorporated in the TAM and related models.

2.2.2 Progression of IS success research

Petter et al. (2012) observe that there are five eras of IS implementation and use (summarized in Table 2.2 below). In the first era (1950s-1960s) the major use of IS was computational and therefore its impact was limited to the highly trained users of the computing technologies. The second era (1960s-1980s) was that of the decision support and management reporting. The users of the system were the employees of the organization who may not have been highly specialized users of these decision support and management reporting systems. The third era (1980s-1990s) was when IS became a strategic asset and personal computing became a norm. The focus shifted on user-friendliness of the IS. The fourth era (1990s-2000s) focused on enterprise systems and networking, and resulted in IS use based on data sharing, collaboration, and networking. The fifth era started in the 2000s and is called the ‘customer focused era.’ In the customer focused era, technology is more customizable and users are the customers. Therefore, the success metrics relevant for the contemporary IS should focus on measures relevant to the customers of such IS (Petter, et al., 2012).

Petter, et al. (2012) suggest that the users of IS, who are also the customers, seek not only the business value but also look for the hedonic pleasure from the use of such IS. Petter et al. (2012), therefore, call for research focused on developing success metrics relevant to the customers (users). These success metrics need to be based on the experiential and the social impacts of the IS under consideration (Petter et al., 2012).
Table 2.2 The IS Success Research Progression

<table>
<thead>
<tr>
<th>Phase/Era</th>
<th>Period</th>
<th>User Focus</th>
<th>Evaluation Metric for IS success</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Processing</td>
<td>1950s-1960s</td>
<td>Highly skilled computing professionals</td>
<td>System’s technical needs like speed, accuracy</td>
</tr>
<tr>
<td>Decision Support/Management</td>
<td>1960s-1980s</td>
<td>More individuals within the firm who were trained in IT</td>
<td>Human factors in addition to technical factors</td>
</tr>
<tr>
<td>Strategic &amp; Personal Computing</td>
<td>1980s-1990s</td>
<td>Front office employees with not much IT skills in addition to trained employees</td>
<td>Strategic goal alignment with IS, productivity, profitability, customer surplus, technology acceptance, Individual evaluation</td>
</tr>
<tr>
<td>Enterprise System and Networking</td>
<td>1990s-2000s</td>
<td>Groups, organizations and individuals</td>
<td>Success for specific IS like Enterprise Resource Planning(ERP) systems, Team performance, Service Quality and net benefits</td>
</tr>
<tr>
<td>Customer Focused Era</td>
<td>2000s and onwards</td>
<td>Customer</td>
<td>Hedonic and experiential benefits of IS, social impact</td>
</tr>
</tbody>
</table>

Adapted from Petter, DeLone, and McLean (2012). Used by permission from the authors

Some IS studies in the past have included user-based metrics along with the success metrics suggested by DeLone and McLean e.g. Sabherwal et al., (2006) proposed a model for IS success and included the constructs of user training, user attitude, user familiarity (in terms of number of years of system use), and user participation. However, these user-based metrics need to be revised in wake of the new rich media tools and the social cues being added to the e-Commerce systems.
2.2.3 User Satisfaction Research

User satisfaction is the most extensively used dependent variable for measuring IS success (Adam Mahmood, Burn, Gemoets, & Jacquez, 2000; and Zviran & Erlich, 2003). A number of studies followed the initial work of Cyert and March (1963) such as Bailey and Pearson (1983); Ives, Olson and Baroudi (1983), and Levitt and March (1988) who proposed that if an IS meets the user needs it would lead to user satisfaction. These user satisfaction measures are essentially utilitarian in nature (Hassenzahl & Tractinsky, 2006).

The HCI literature on the other hand has focused on user-centric evaluation of technology and encompasses both the utilitarian and the hedonic aspects of technology (Hassenzahl & Tractinsky, 2006). Hassenzahl and Tractinsky (2006) in their extensive review of the IS research contend that the user-centric technology evaluation research has seen two major schools of thought; one focusing on task specific usability evaluation or user satisfaction, and, the other based on non-task related or aesthetic value of technology. An alternative view to these two approaches in the user-centric research is a combination of both the task related and non-task related value of an IS, put forth by researchers like Hassenzahl (2004). This alternative view provides meaningful insights to designers for creating IS that address the ‘whole’ of human needs as human needs have both task related and non-task related facets (Hassenzahl & Tractinsky, 2006; and Lowry et al., 2013). With IS embodying experiential and social cues (Petter et al., 2012), the traditional usability or user satisfaction paradigm is giving way to the experiential paradigm or the User Experience emphasis (Vermeeren et al., 2010). Vermeeren et al. (2010) observe that user satisfaction research has a well established body of work with several well developed metrics. On the other hand, User Experience research needs more
standardization and investigation. User Experience as a measure is highly dynamic as it is based on the perceptions of users originating from the users’ cognitive and affective faculty (Vermeeren et al., 2010). The complexity of measuring User Experience can be comprehended by the fact that there is much conflict among the researchers even when it comes to defining User Experience (Väänänen-Vainio-Mattila, Roto, & Hassenzahl, 2008). Väänänen-Vainio-Mattila et al. (2008) stress that User Experience research should focus on building and developing a body of knowledge about the construct of User Experience itself. Additionally, empirical studies on User Experience should extend the limited empirical work in the field (Hassenzahl & Tractinsky, 2006).

2.2.4 User Experience as Success Metric for IS

User Experience can be conceptualized as a unique combination of elements like internal state of the user and the system being used (Hassenzahl & Tractinsky, 2006). Hassenzahl and Tractinsky (2006) define User Experience as “a consequence of a user’s internal state (predispositions, expectations, needs, motivation, mood, etc.), the characteristics of the designed system (e.g. complexity, purpose, usability, functionality, etc.) and the context (or the environment) within which the interaction occurs (e.g. organizational/social setting, meaningfulness of the activity, voluntariness of use, etc.).”

Information Systems and technologies are not only used by businesses but also by individuals routinely in the form of graphics, audio-visual and other media tools. Therefore, technology is valued for more than its functionality alone (Hassenzahl & Tractinsky, 2006). An e-Commerce website is an IS with a highly interactive technology interface and is therefore valued for both its utilitarian and non-utilitarian
functions. Most of the human interaction in e-Commerce has been replaced by the website interface. Yet new technology is humanizing the interface with rich media tools. Li, Daugherty, and Biocca (2001) suggest that virtual experience that stems from the highly interactive e-Commerce environment of today can simulate a real life experience. The user base of interactive products and technologies is shifting, and therefore it is necessary for the IS researchers to look into the experiential aspects of such IS (Hassenzahl & Tractinsky, 2006). Further, Hassenzahl and Tractinsky (2006) contend that the future research on User Experience should focus on outstanding quality experiences rather than focusing only on the usability issues. Researchers have suggested that IS research is increasingly adopting user oriented thinking (Bardhan, Demirkan, Kannan, Kauffman, & Sougstad, 2010). What is required therefore is an inclusive approach in IS Research that combines various aspects of IS evaluation (Rai & Sambamurthy, 2006).

Some researchers argue that for evaluating interactive systems, experiential measurements are better suited (Israel, 2005). For example experiential measurements based on the construct of User Experience have recently gained significant impetus over the usability paradigm (Hassenzahl & Tractinsky, 2006).

2.2.5 Making a Case for User Experience as a Measure of e-Commerce System Success

Vermeeren et al. (2010) contend that User Experience is a subjective concept and is determined by how the users feel about the system that they are interacting with. User Experience has become a common term in the trade press and industry literature and the key issue for businesses is to systematically manage it. Experience driven innovations are more likely to succeed as compared to the technology push or a
market driven innovation (Gentile et al., 2007). A technology ahead of its time or not perceived positively by the user is unlikely to succeed. Organizations need to periodically test their innovations in terms of the User Experiences that it generates.

Earlier studies on e-Commerce User Experiences (Novak et al., 2000) found that task oriented activities like product search and online shopping did not have enough challenge to induce telepresence and involvement that are required for creating a gripping online experience. However, e-Commerce websites are now equipped with rich media tools and technology and these may lead to a compelling online User Experience which was lacking earlier. Many IS researchers in recent times have therefore adopted User Experience as the dependent variable (Ding et al., 2011; Hsu & Tsou, 2011; and Rose et al., 2011).

There is much debate about the concept of e-Commerce User Experience and its definition (Rose et al., 2011). In fact the terminology used itself differs where e-Commerce User Experience has been named website brand experience (Ha & Perks, 2005), online shopping experience (Khalifa & Liu, 2007), and online experience (Novak et al., 2000). Rose et al. (2011) further suggest that e-Commerce User Experience should be explored in light of the technological advancements like the influence of social interactions enabled by media rich technology.

Hassenzahl (2004) contends that the User Experience research focuses on a combination of both the task related and the non-task related attributes of the IS being evaluated. Similarly, Schmitt (1999) argues that instead of focusing only on the functional value of products and services, businesses should focus on experiences that occur based on undergoing or living through such products and services. According to
Schmitt (1999) experiential evaluations deal with the sensory, cognitive, emotional, behavioral, and relational values of products and services, and such an analysis will help enhance the understanding of user behavior.

The e-Commerce User Experience is inclusive of the emotions and feelings evoked during the interaction with the e-Commerce system (Gentile et al., 2007). The experiential evaluation of products and services has been employed in the offline context (Arnold, Reynolds, Ponder, & Lueg, 2005; and Bonnin, 2006). Such an experiential evaluation has now also been employed in the online context like Novak et al. (2000) and Rose et al. (2011). Based on the review above, this study contends that ‘User Experience’ should be used as a dependent variable for measuring e-Commerce system success.

2.3 Defining and Measuring User Experience

User Experience with an e-Commerce system is defined as “private events that occur due to encountering, undergoing or living through the interaction with the system” (Hassenzahl & Tractinsky, 2006). Such interactions affect the user at both the cognitive and affective levels (Rose et al., 2011). The Human-Computer Interaction (HCI) literature emphasizes that ‘User Experience’ is a broad term that includes the hedonic, temporal, contextual, and aesthetic value besides the usability aspects of a system (Beauregard & Corriveau, 2007; Forlizzi & Battarbee, 2004; and Hassenzahl & Tractinsky, 2006). Forlizzi & Ford (2000) suggest that an experience is comprised of a large number of smaller experiences that relate to people, products, and contexts.

The Internet is not only used as a utilitarian tool but also as a medium for conducting recreational and social activities (Kao et al., 2007; and Kim, 2002). The IS
literature is highly focused on the utilitarian aspects of the systems and it has mostly ignored the hedonic aspects (Hassenzhal & Tractinsky, 2006; and Lowry et al., 2013). Though the IS studies based only on utilitarian aspects of the system, were useful in establishing the connection between the value of information technology and the consequent user behavior, contemporary usage of IT or systems has evolved into both instrumental and non-instrumental use (Agarwal & Karahanna, 2000; and Deng et al., 2010). As such the focus on hedonic aspects of an Information System is no longer discretionary. The highly interactive rich media tools and the omnipresence of such technology and its tools into the users’ daily lives are some of the reasons why a purely utilitarian view of system’s value may be less desired (Agarwal & Karahanna, 2000). The experiential facets of systems allow their users to be involved in the consumption activity that goes beyond just goal achievement and include dimensions of enjoyment, pleasure, and empowerment (Deng et al., 2002). In fact contemporary systems like the e-Commerce websites, mobile devices and the like, are designed with functional as well as experiential features (Thong et al., 2006) and their evaluation should also encompass both of these elements. Besides, in a competitive market, the hedonic quality dimensions can create a sustainable differentiation for the firms that design such systems (Deng et al., 2010; and Zhang, Von Dran, Blake & Pipithsukunts, 2001). Deng et al. (2010) however caution that the hedonic aspects may not replace the utilitarian aspects of an IS but may serve as complementary to them.

Knijnenburg, Willemsen, Gantner, Soncu, & Newell (2012) explain that there are two major approaches to understanding user behavior as a result of an interaction with a system. The first approach is based on the Theory of Reasoned Action (TRA) suggested by Fishbein and Ajzen (1975) and is echoed in theories like the Technology Acceptance Model (TAM) (Davis, 1989); and the Unified Theory of Acceptance and
Use of Technology (UTAUT) (Venkatesh et al., 2003). These theories focus on the pragmatic aspects of system evaluation.

The other approach is the one adopted by User Experience researchers that focuses on the hedonic as well as the pragmatic attributes of the IS (Hassenzahl, 2004; and Deng et al., 2010).

The construct of User Experience encompasses factors that are well beyond the situations that designers can control, such as emotionally aroused states, cultural backgrounds or prior experiences with the IS (Forlizzi & Ford, 2000). A user is an active participant in the interaction with the system. A user brings to the interaction all his prior experiences, emotions, cognitive, and sensory responses, and his values.

Researchers have found that a superior experience can be a differentiator in the market place (Bloch, 1995; and Forlizzi & Battarbee, 2004). Forlizzi & Battarbee (2004) proposed that a user’s interaction with a system should be looked upon in the in the social context. Their framework divides the interaction into fluent (those interactions do not compete for our attention and can be performed effortlessly), cognitive (those interactions which result in knowledge, confusion or error if a system/product does not behave in a familiar way), and expressive (these interactions help the user form relationship with the system/product in the form of stories).

Law et al. (2009) emphasize that User Experience should be differentiated from, i) Brand experience which is broader in scope as compared to User Experience ii) Product experience which is limited in scope to the use of the product purchased as a result of interaction with the system (e-Commerce website in this case) and iii) Service experience which extends much beyond the system interaction process
described in the Figure 1.1 in Chapter 1. Law et al. (2009) recommend that the
construct of User Experience should be scoped to all experiences that are formed due
to the interaction with the user interface (i.e., the e-Commerce web interface).

According to Karapanos et al. (2009) there are two major schools of thought in
User Experience research. The first one is focused on how an experience is formed,
aquired and then communicated in the social context (Forlizzi & Battarbee, 2004;
Forlizzi, 2007; and McCarthy & Wright, 2004). According to this school of thought,
an experience moves from the unconscious to the cognitive and to the memorable
state in social interactions (Karapanos et al., 2009).

The second school of thought emphasizes both the usability and hedonic
dimensions of User Experience (Hassenzahl, 2004; Hassenzahl & Tractinsky, 2006;
and Tractinsky & Zmiri, 2006) and is based on concepts derived from social
psychology (Karapanos et al., 2009). Karapanos et al. (2009) emphasized on the
temporality of the User’s Experience. Temporality means that User Experience
develops over time and cannot be judged by only one interaction. For instance with
increased number of interactions, the user develops familiarity and therefore
encounters less frustrating episodes and at the same time less exciting episodes as
well (Karapanos et al., 2009). Similarly facets like the learnability and novelty which
are critical in forming the initial impressions about the systems may become less
important with time, and facets like social cues emanating from the system might
increase in importance with time (Karapanos et al., 2009).

Another approach to classify an experience is suggested by Forlizzi and
Battarbee (2004). Forlizzi and Battarbee (2004) suggest that there are three levels of
experience namely ‘experience’ (constant stream of self-talk in the conscious state); ‘an experience’ (represented with a particular sense of completion, often invoking an emotion and having a beginning and an end); and ‘co-experience’ (experiences created together or shared with people). Forlizzi and Battarbee (2004) claim that experiences are comprised of infinite small experiences and that they change over time. This means that with time the smallest experiences tend to be forgotten and larger extreme experiences are remembered. The scalable or expansive nature of experience helps users articulate them and add stories and meaning to them (Forlizzi & Battarbee, 2004).

2.3.1 Conceptualizing User Experience

Beauregard & Corriveau (2007) present a simple yet effective interaction based model of User Experience. Figure 2.2 is an adaptation of Beauregard & Corriveau (2007) model. The model described in Figure 2.2, illustrates the various components of User Experience and the relationship among the various elements of User Experience.

Based upon the study by Beauregard & Corriveau (2007), few observations that can be made from Figure 2.2:

- User experience is a result of interaction with the system across various uses of such a system. As such, User’s Experience with a system is a cumulative concept.

- User experience can be described as the thoughts, emotions, behaviors, perceptions and attitudes that the users reflect towards the system as a result of the interaction with the system.
A User’s Experience with the system is therefore, the perception of the user’s mental model of the system. Mental models with respect to interaction with a system refer to the user’s representation of how a system functions to perform a task at hand (Proctor & Vu, 2009). As such the perceptions, emotions, attitudes and behaviors of the users toward the system define the User’s Experience of the system.

- The framework represented by Figure 2.2 suggests that an interaction with a system gives rise to User’s Experience with the system. The User’s Experience influences the use and the intention to use the system across time.

The HCI literature is increasingly focusing on those aspects of technology that go beyond the instrumental in order to understand the overall evaluation of the interactive products (Karapanos et al., 2009). As such many studies including those
from the HCI research stream have focused on the concept of User Experience (Hassenzahl & Tractinsky, 2006). Table 2.3 lists some of the important studies on the construct of User Experience. Beauregard and Corrieveau (2007) proposed a simple and easy to understand framework for understanding the construct of User Experience and its related psychological constructs.

Table 2.3 Studies Based on the Concept of User Experience

<table>
<thead>
<tr>
<th>Author</th>
<th>Dimensions covered</th>
<th>Findings</th>
</tr>
</thead>
</table>
| Schmitt (1999) | Sensory Cognitive Emotional Relational Lifestyle | • Experiences affect people at various conscious and subconscious levels  
• These dimensions provide a better understanding of users interactions with product/service |
| Hassenzahl, Platz, Burmester, & Lehner (2000) | Cognitive Affective Sensory | • Factors that make a system appealing to users like the experiential qualities should be explored  
• Both qualitative and quantitative methods should be used to better conceptualize User Experience |
| Forlizzi & Ford (2000) | Cognitive | • Socialness of the system influences User Experience  
• It is important to create pleasant experiences for creating systems that meet user expectations is emphasized |
| Hassenzahl (2004) | Cognitive Affective | • Experiential qualities help users to perceive the system more favorably and makes the system appear more social to the users  
• Experiential features are an important determinant of user perception about the quality of a system |
| Berry, Wall, & Carbone, (2006) | Functional clues Mechanic clues Humanic clues | • Businesses need to incorporated each of the three cues to increase the emotional and relational aspects of the quality of the service provided |
| Hassenzahl & Tractinsky (2006) | Cognitive Affective Sensory Pragmatic | • User Experience focus will lead to development of systems that create outstanding experiences than merely prevent usability issues which in a sense is a progression of the quality of a system |
Table 2.3 Studies Based on the Concept of User Experience contd.

<table>
<thead>
<tr>
<th>Author</th>
<th>Dimensions covered</th>
<th>Findings</th>
</tr>
</thead>
</table>
| Beauregard & Corriveau (2007) | Cognitive Affective Sensory | • User Experience is an important differentiator in competitive markets  
• User Experience should be an important part of system development process itself and should be included as an important organizational objective |
| Hodza (2009) | Social Pragmatic Ergonomic Hedonic | • For fully understanding User Experience of a system, multiple evaluation methods should be employed  
• A highly interactive and experiential system creates the perception of high task performance among its users |
| Karapanos, Zimmerman, Forlizzi, & Martens (2009) | Functional Emotional Familiarity | • Experiential measures should not only be done at the early system development stage but also at a later stage. This implies that User Experience should be captured after the user has interacted with the system many times over |
| Law, Roto, Hassenzahl, Vermeeren, & Kort (2009) | NA | • User Experience is a dynamic, subjective and context-dependent construct  
• There is a need to integrate most of the varied opinions about the scope and nature of User Experience |
| Deng, Turner, Gehling, & Prince (2010) | Flow/Cognitive | • User Experience influences the user satisfaction and the continual usage of the system  
• This study used User Experience as an antecedent variable for Usage and user satisfaction and found support for the same  
• Contemporary systems need to have both utilitarian and hedonic functions to ensure continual usage of the system |
Table 2.3 Studies Based on the Concept of User Experience contd.

<table>
<thead>
<tr>
<th>Author</th>
<th>Dimensions covered</th>
<th>Findings</th>
</tr>
</thead>
</table>
| Ding, Huang, & Verma (2011) | Flow/ Cognitive | • The design of a website affects an e-Commerce firms relationship with the customer (user)  
• High experiential value can serve as a competitive advantage for an e-Commerce firm |
| Kim (2011) | Hedonic | • There is a connection between interactivity of a website and its experiential value  
• e-Commerce firms can engage users by providing customized features and products |
| Kohler, Fueller, Matzler, & Stieger (2011) | Pragmatic Usability Hedonic Social | • The interaction with interactive systems are very much like the offline, real time interactions thanks to the technological advances  
• If a system fulfills a user’s hedonic needs, the efforts involved in interacting with the system and collaborating with other users no longer feels like work to the user. This means that a user will participate more in the system in case the experiential gain is high |
| Huang (2012) | Cognitive Affective | • The empirical study suggests that User Experience is a mediator variable between system characteristics and purchase intention |
| Knijnenburg, Willemsen, Gantner, Soncu, & Newell (2012) | Hedonic Pragmatic | • System evaluation frameworks should focus on user centric evaluation  
• User Experience with the system can provide insights into how much the user is ready to share as feedback |
| Georgiadis, Chau & (2013) | NA | • User Experience should be incorporated with the traditional IS models like TAM (Davis, 1989) and IS satisfaction research.  
• This is especially true for the emerging e-Commerce systems due to their inherent interactive nature. |
According to Beauregard and Corriveau (2007), the interaction between an interactive system and its user evokes the emotions, thoughts, and attitudes of the users. The user perceptions created as a result of such interaction in turn influence the users’ usage intention.

Another approach was followed by Jordan (2000) who contemplates User Experience at the higher end of a system interaction continuum while functionality i.e. what the product/system is able to do is at the lowest level, and, usability or ease of use stands at the middle level. This view suggests that although the lower order evaluation factors relating to functionality cannot be ignored, they are not sufficient by themselves to generate a superior User Experience.

Karapanos et al. (2009) extended the Silverstone and Haddon’s (1996) model of adoption of interactive products to explain User Experience. The Silverstone and Haddon’s (1996) model suggested three phases of adoption of an interactive product starting with commoditization or familiarity, resulting in appropriation or functional dependence and finally the incorporation or emotional attachment.

In their study of User Experience with iPhones, Karapanos et al. (2009) found that novelty and ease of use are important evaluation criteria in the initial phase of product use. With time novel interaction gives way to usefulness and finally develops an emotional attachment with the users. Their study established that interactive products influence users at personal levels as it communicates self-identity and helps users connect with others.
Karapanos et al. (2009) found that actual experience is more important in forming satisfaction with an interactive product than the user’s a priori expectations from the product especially when the product is used over a period of time. Therefore, time is a significant factor that alters a User’s Experience with products. Karapanos et al. (2009) suggested that User Experience research should move beyond the early interaction stage into that of the continual use stage. This would need focus on how a product influences and becomes meaningful in a user’s life.

Hassenzahl et al. (2000) suggested an extended model of User Experience and included the usability aspects along with aesthetic aspects within the system design. In their study Hassenzahl et al. (2000) found that both task directed and hedonic qualities are important determinants of user satisfaction with a system.

Kim (2011) examined the effects of web interactivity on the experiential value of a website by considering the multidimensionality of interactivity including product customization, socialization, synchronicity, two-way communication, demonstrability, and information customization. Kim (2011) also found each of these six dimensions significantly predicting experiential value in one of the six dimensions of visual appeal, escapism, excellence, economic value, entertainment, and efficiency. Ding et al. (2011) suggested a framework for experiential measurement of user’s interaction with e-brokerage services. Deng et al. (2010) developed and empirically tested a framework that measures the relationship between the User Experience and the System Usage.

Hodza (2009) examined the User Experience of a Geospatial IS and found overall
support for hedonic, social, ergonomic, and pragmatic dimensions of User Experience and its impact on System Usage.

2.3.2 Summary of Review of User Experience Research

From the above review it can be noted that the concept of User Experience is gaining importance among various IS researchers. Many studies have focused on dimensionalizing and conceptualizing User Experience as summarized in Table 2.3. However, there is lack of consensus among researchers as to the conceptualization of the construct of User Experience. Law et al. (2009) conducted a survey of 275 experts of User Experience from academia and the industry to gain some common understanding of the concept of User Experience. The results of their study (Law et al., 2009) indicated that most of the experts agreed that User Experience is a subjective, context-dependent, and a dynamic concept. This study agrees with the observation made by Law et al. (2009) with regard to the varied views of the concept of User Experience among the researchers. Law et al. (2009) point out several reasons for the lack of consensus among researchers, notably the following:

- User Experience is related to a number of dynamic and blurry concepts like hedonism, aestheticism, affect, and experience

- Researchers have included or excluded variables that explain the construct of User Experience on an arbitrary basis depending on their background
- The range of the concept of User Experience is too broad and it includes individual user interaction with an application to multi-user interactions with various services of the organization

- Theoretical models on User Experience are diverse and focus on different aspects on the concept.

This dissertation considers that User Experiences result from an interaction with an Information System and involve the user’s participation at a cognitive, affective, and sensory level (Beauregard & Corriveau, 2007; Hassenzahl et al., 2000; and Hassenzahl, 2004).

2.4 Understanding System Usage

System Usage is defined as the degree or manner in which the user utilizes an Information System (Petter et al., 2013). The IS literature has focused on an individual’s decision for continual System Usage (Deng et al., 2010; Flavian et al., 2006; Kim & Steinfield, 2004; and Thong et al., 2006). System Usage is critical for Internet based services like e-Commerce in as a continual System Usage by the users generates revenues in the long run (Flavian et al., 2006).

Based on the Theory of Reasoned Action (Fishbein & Ajzen, 1975), it can be argued that the user’s attitude towards the system is reflected in his/her experiences post interacting with the system, and this interaction results in a behavioral effect which is the System Usage (Deng et al., 2010). Studies have established the importance of continual System Usage for IS success (Bhattacherjee, 2001a, 2001b; and Flavian et al., 2006).
Most of the studies that have measured System Usage so far have emphasized only the utilitarian value that the user derives from the system use (Bhattacherjee, 2001a, 2001b; Deng et al., 2010; Flavian et al., 2006; Karahanna, Straubb, & Chervany, 1999; Kim & Steinfield, 2004; and Thong et al., 2006). Although these studies are highly valuable in establishing the connection between the utilitarian value of IT and the consequent user behavior, the contemporary usage of IT or systems is based on both the instrumental and intrinsic value (Agarwal & Karahanna, 2000).

Some studies have found hedonic or experiential goals to be important determinants of the user satisfaction and System Usage in the organizational user context (Igbaria, Schiffman & Wieckowski, 1994) as well as in the individual user context (Deng et al., 2010). Users evaluate systems based upon their direct experiences with the system and such experiences lead to behavioral intentions like System Usage. Deng et al. (2010) emphasized the importance of investigating the impact of User Experience on the System Usage.

One must, however, caution against stating that the hedonic value by itself is a good reason for continued System Usage, or satisfaction with a system. Deng et al. (2010) found a negative relationship between hedonic value and satisfaction in absence of a utilitarian value of the system. This clearly indicates that if the system does not exhibit utilitarian value the mere presence of hedonic value will not result in user satisfaction and vice versa. Hedonic and utilitarian values need to be examined in conjunction rather than in disjunction.
2.5 The Independent Variables

The previous two sections based on User Experience and System Usage discussed the dependent variables used in this dissertation. The independent variables in this study draw majorly from the DeLone and McLean (2004) e-Commerce success model. This was done since the ‘system’ evaluated for this study is the e-Commerce website.

The DeLone and McLean (1992; 2003; and 2004) IS success models are perhaps the most cited models in the IS evaluation literature (Agourram, 2009). These models have been validated over a period of time by various researchers (Rai et al., 2002). The models are robust and therefore adapted in this study for identifying the independent variables. Since, the study deals with e-Commerce success, DeLone and McLean (2004) model for e-Commerce success is adopted.

2.5.1 The DeLone and McLean Models

DeLone and McLean (1992) suggested a framework to measure IS success and this framework has since then been extensively used in the IS literature (Rana et al., 2012). The DeLone and McLean IS success model was based on six inter-correlated measures of System Quality, Information Quality, User Satisfaction, Use (System Usage), Individual Impact, and Organizational Impact. The original model was updated in 2003 whereby a new dimension of ‘Service Quality’ was added to the original model. In 2004, DeLone and McLean presented the e-Commerce success model based on their prior studies. The latter has been used in this study as a basic framework for developing a comprehensive measure of e-Commerce system evaluation.
Some variations to the DeLone and McLean Models were made for the purpose of this study. Many prior studies have either adopted or expanded the DeLone and McLean models depending upon the objective of their study (Rana, Dwivedi, & Williams, 2013). The original model suggested by DeLone and McLean (1992) depicted System Quality and Information Quality as antecedents for System Usage and User Satisfaction. System Usage and User Satisfaction affect the individual using the system. One fundamental consideration in the DeLone and McLean Model is that Use or System Usage (the term used in this study) is used to measure the success of a system (Rai et al., 2002). This emphasis is because System Usage is fundamental to any realization of system benefits.

The DeLone and McLean (1992, 2003, and 2004) models have derived their theoretical base from the Communication Theory (Shannon and Weaver, 1949). Shannon and Weaver (1949) suggested three levels for group communication namely the technical level, the semantic level and the effectiveness level (Rai et al., 2002). The technical level deals with the system related factors of communication, the semantic level relates to the meaning derived by the receiver as compared to what the sender intends to communicate, and the effective level deals with how the communication received affects the actual behavior of the receiver (Shannon & Weaver, 1949). DeLone and McLean (1992) used the Communication Theory in the IS context, and, equated System Quality to the technical level, Information Quality to the semantic level, and System Usage, User Satisfaction and Individual Impact to the effectiveness level. Later, DeLone and McLean (2003) suggested the inclusion of Service Quality to the original model to include changes necessitated by the e-Commerce domain and demonstrated the e-Commerce success model in their study (DeLone & McLean, 2004). DeLone and McLean (2004)
argued that even though the role of information technology in an organization remains the same, some adaptations to the model to suit its context to e-Commerce domain must be made. They proposed two improvements to suit the e-Commerce context. One was addition of the Service Quality construct in order to incorporate the impetus on service and support in the success of e-Commerce system. The second improvement involved the collapsing of individual impacts and organizational impacts into a more frugal ‘net benefits’ construct. DeLone and McLean (2004) suggest that e-Commerce studies should employ established measures and should adhere to the objectives and the context of the study, in order to create robust results. In a similar vein, Petter et al. (2012) suggest that causal associations of system success variables should be hypothesized within the context of a particular study which is travel websites in this study. Therefore, this study used a modified model derived from DeLone and McLean’s (1992, 2003, and 2004) work in order to suit the context.

Researchers have used the original and modified versions of the DeLone and McLean models in order to arrive at a useful measure for system success. Seddon and Kiew (1996) empirically tested the DeLone and McLean model and found support for the same whereby they found System Quality, Information Quality, and Usefulness (which was an additional construct suggested by Seddon & Kiew, 1996) together explain as much as 70% of the variance in User Satisfaction.

Sabherwal et al. (2006) tested a modified version of the DeLone and McLean (1992, 2003, and 2004) model by including user-related and contextual attributes of the IS. They found support for their hypotheses in general and concluded that their

Some studies have also tried to implement the DeLone and McLean (1992, 2004) models in various e-Commerce categories like student loan industry (Chong, Cates, & Rauniar, 2010), and e-government (Rana et al., 2012). Lee and Kozar (2006) examined various e-Commerce website categories using the DeLone and McLean (1992, 2003, and 2004) model and found support for their hypotheses.

The studies reviewed in this section were limited to those that have used the DeLone and McLean models or modified versions thereof to measure system success (see Table 2.4 for details). The DeLone and McLean (1992) model has provided a useful framework to organize studies that aim to measure system success (Petter et al., 2008). In Table 2.4, we present the major studies based on the DeLone and McLean models along with the context in which these studies were conducted and the major findings of these studies. As can be observed from the Table 2.4, a number of studies based on DeLone and McLean’s models have examined the model in the context of various Information Systems like e-Commerce, Knowledge Management Systems, e-Learning Systems, Instant Messaging Systems, and Enterprise Systems among others. These studies establish the applicability of DeLone and McLean models across various contexts. The studies based on DeLone and McLean models have tested the models by introducing new variables e.g., System Creation and Maintenance (Crowston et al., 2006); Environmental
Factors (Hwang, Windsor, & Pryor, 2000); Top Management Support (Sabherwal et al., 2006) among others. Notably, there is an over reaching emphasis on the “utility based” measures for system success in the studies based on the DeLone and McLean models.

Table 2.4 Major Studies Based on DeLone and McLean (1992, 2004) Models

<table>
<thead>
<tr>
<th>Author</th>
<th>Variables Used</th>
<th>Context</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seddon &amp; Kiew (1996)</td>
<td>System Quality, Information Quality, Usefulness, User Satisfaction</td>
<td>Accounting System</td>
<td>Focused on individual user and found support for their hypotheses. All the independent variables were found to be significant in predicting user satisfaction.</td>
</tr>
<tr>
<td>Hwang, Windsor, &amp; Pryor (2000)</td>
<td>Organizational Environment, External Environment, Information System, IS Development, IS Operations Environment, User Environment, System Success</td>
<td>Information Systems</td>
<td>A meta-analysis of 82 studies based on DeLone and McLean Model. Studied the impact of six variables on system success and found a positive relation all but one (External Environment) on System Success</td>
</tr>
<tr>
<td>Kim C. S., Peterson &amp; Kim, J. H. (2000)</td>
<td>System Level, Organizational Level, Strategic Level, User Level</td>
<td>Information Systems</td>
<td>Investigated the perception of IS developers toward what constitutes success of IS. IS developers considered System Level and Organizational Level factors more important than the Strategic and User Level factors.</td>
</tr>
<tr>
<td>Molla &amp; Licker (2001)</td>
<td>System Quality, Information Quality, Service and Support, User Satisfaction, Use, Trust</td>
<td>e-Commerce</td>
<td>Suggested the addition of service dimension to the DeLone and McLean model. The study focused on e-Commerce and therefore emphasized the service dimension.</td>
</tr>
</tbody>
</table>
Table 2.4 Major Studies Based on DeLone and McLean (1992, 2004) Models contd.

<table>
<thead>
<tr>
<th>Author</th>
<th>Variables Used</th>
<th>Context</th>
<th>Findings</th>
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</thead>
<tbody>
<tr>
<td>Gable, Sedera, &amp; Chan</td>
<td>System Quality, Information Quality, Satisfaction, Individual Impact, Organizational Impact</td>
<td>Enterprise System</td>
<td>Developed a model and instrument based on DeLone and McLean Model in the ERP context.</td>
</tr>
<tr>
<td>McGill, Hobbs, &amp; Klobas</td>
<td>Information Quality, System Quality, Perceived System Quality, Intended Use, User Satisfaction, Organizational Impact, Individual Impact</td>
<td>User Developed Applications</td>
<td>Four out of the nine hypotheses were supported. Measures were based on user perceptions of quality instead of the objective quality measures.</td>
</tr>
<tr>
<td>Sedera &amp; Tan (2005)</td>
<td>System Quality, Information Quality, Use, User Satisfaction, Individual Impact, Organizational Impact</td>
<td>Enterprise Systems</td>
<td>Focused on the User Satisfaction dimension in IS success evaluations. This study suggests that User Satisfaction should be used as a measure for IS success rather than a dimension of IS success.</td>
</tr>
<tr>
<td>Bradley, Pridmore, &amp; Byrd (2006)</td>
<td>Plan Quality, System Quality, Information Quality, Impact of Strategic User, Impact of Operational Use, Impact of Tactical Use</td>
<td>Information Systems</td>
<td>Found support for their adapted model of DeLone and McLean’s. Plan Quality was used as antecedent for Information Quality and System Quality. The study established that IS success variations are explained by Plan Quality of IT and the corporate culture of the firm.</td>
</tr>
</tbody>
</table>
Table 2.4 Major Studies Based on DeLone and McLean (1992, 2004) Models contd.

<table>
<thead>
<tr>
<th>Author</th>
<th>Variables Used</th>
<th>Context</th>
<th>Findings</th>
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</thead>
<tbody>
<tr>
<td>Lee &amp; Kozar (2006)</td>
<td>System Quality, Information Quality, Service Quality, Use, User Satisfaction, Net Benefits</td>
<td>e-Commerce</td>
<td>Used DeLone and McLean model in conjunction with other relevant models and analyzed websites dealing in various categories of commodity products. Overall they found good support for the framework.</td>
</tr>
<tr>
<td>Sabherwal, Jeyaraj &amp; Chowa (2006)</td>
<td>System Quality, Perceived Usefulness, User Satisfaction, System Use, User Experience (in terms of prior use experience), User Training, User Attitude and User Participation, Top Management Support, Facilitating Conditions</td>
<td>Information Systems</td>
<td>Overall the study found support for most of the hypotheses. The study combined the IS success measures with TAM measures to present a comprehensive understanding of system success by including various user based and contextual factors.</td>
</tr>
<tr>
<td>Wu &amp; Wang (2006)</td>
<td>System Quality, Knowledge Information Quality, Perceived Knowledge Benefits, User Satisfaction, System Use</td>
<td>Knowledge Management Systems</td>
<td>Five out of seven hypotheses were supported. Validated the DeLone and McLean’s Model in the Knowledge Management context.</td>
</tr>
<tr>
<td>Author</td>
<td>Variables Used</td>
<td>Context</td>
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<tr>
<td>Halawi, McCarthy, &amp; Aronson (2007)</td>
<td>System Quality, Information Quality, Service Quality Satisfaction, Use, Net Benefits</td>
<td>Knowledge Management Systems</td>
<td>Thirteen out of fourteen hypotheses supported. Service Quality was found insignificant in determining Intention to Use</td>
</tr>
<tr>
<td>Bernroider (2008)</td>
<td>System Quality, Information Quality, Service Quality, Intention to User/Use, User Satisfaction, Net Benefits</td>
<td>Enterprise Systems</td>
<td>Tested the DeLone and McLean model in the ERP system lifecycle and focused on the ERP success levels based on IT governance mechanism. The study found support for ERP success among the adopters of ERP.</td>
</tr>
<tr>
<td>Lin, Huang, Joe, &amp; Ma (2008)</td>
<td>System Quality, Information Quality, Social Quality, Satisfaction, Usage Intention</td>
<td>Instant Messaging System</td>
<td>Nine out of thirteen hypothesized paths were statistically significant. Social Quality (users’ perception of how others in their social circle perceive their use of the system) significantly influences the Usage Intention of the system.</td>
</tr>
</tbody>
</table>
Table 2.4 Major Studies Based on DeLone and McLean (1992, 2004) Models contd.

<table>
<thead>
<tr>
<th>Author</th>
<th>Variables Used</th>
<th>Context</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Wang (2008)</td>
<td>System Quality, Information Quality, Service Quality, Perceived Value, User Satisfaction, Intention to Reuse</td>
<td>e-Commerce</td>
<td>Substituted the perceived usefulness construct with perceived value and found a good support for their framework.</td>
</tr>
<tr>
<td>Bock, Shin, Suh, &amp; Hu (2009)</td>
<td>System Quality, Relationship Quality, Knowledge Codifiability, Output Quality, Absorptive Capacity, System Update, Use, User Satisfaction</td>
<td>Knowledge Management System</td>
<td>Developed and tested a model based on DeLone and McLean’s and Knowledge Sharing Framework for a Knowledge Management System. The model was empirical tested and the result suggest a good fit of the combined model implying that success should be recorded as a process between internal and external sources of knowledge</td>
</tr>
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</table>
Table 2.4 Major Studies Based on DeLone and McLean (1992, 2004) Models contd.

<table>
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<tbody>
<tr>
<td>Schaupp, Belanger, &amp; Fan (2009)</td>
<td>System Quality, Information Quality, Individual Impacts, Subjective Norms, Website Satisfaction</td>
<td>Online Community Websites and e-Commerce Websites</td>
<td>Tested an adapted version of DeLone and McLean’s Model in the website context and the e-Commerce context. The results reveal that variations exist between IS success perceptions when the users evaluated e-Commerce websites versus online community websites</td>
</tr>
<tr>
<td>Urbach, Smolnik, &amp; Riempp (2009)</td>
<td>System Quality, Information Quality, Service Quality, Use, Intention to Use, User Satisfaction, Net Benefits</td>
<td>Information Systems</td>
<td>A literature review of studies based on DeLone and McLean Models. Findings suggest that DeLone and McLean Models are dominant basis for IS evaluation. Most of the studies are quantitative, focus on varied types of IS, and measure mostly the individual impact of the IS.</td>
</tr>
<tr>
<td>Chong, Cates, &amp; Rauniar (2010)</td>
<td>System Quality, Information Quality, Service Quality, Use, User Satisfaction, Net Benefits</td>
<td>e-Commerce</td>
<td>The empirical analysis suggested a fairly good fit of the model to data, although some relationships were insignificant.</td>
</tr>
<tr>
<td>Lin &amp; Wang (2012)</td>
<td>Task Technology Fit, System Success Factors, System Acceptance, Perceived Usefulness, Satisfaction, Intention to Use</td>
<td>e-Learning</td>
<td>Both quantitative and qualitative methods used. Task-Technology Fit and Information Quality were found to influence system Acceptance. Perceived Usefulness and System Satisfaction influence Intention to Use</td>
</tr>
</tbody>
</table>
Table 2.4 Major Studies Based on DeLone and McLean (1992, 2004) Models contd.

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</thead>
<tbody>
<tr>
<td>Sorum, Medaglia, Kim, Murray, &amp; DeLone (2012)</td>
<td>Information Quality, System Quality, Service Quality, User Satisfaction, User Benefits</td>
<td>Information Systems-Public Sector</td>
<td>Explored the relationships between IS success measures and the webmaster intermediaries’ perceptions of these measures. Webmasters who conduct user testing of the systems display strong associations between success variables rather than the webmasters who conduct no user testing.</td>
</tr>
<tr>
<td>Alshibly (2014)</td>
<td>System Quality, Information Quality, Service Quality, Use, User Satisfaction, Net Benefits</td>
<td>e-HRM</td>
<td>Tested the DeLone and McLean model for an e-HRM system and found strong empirical support for the original DeLone and McLean Model.</td>
</tr>
</tbody>
</table>
Table 2.4 Major Studies Based on DeLone and McLean (1992, 2004) Models contd.

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<tbody>
<tr>
<td>Balasubramanian, Jagannathan, &amp; Natarajan (2014)</td>
<td>System Quality, Information Quality, Service Quality, Perceived Security, Use, User Satisfaction, Net Benefits</td>
<td>e-Banking</td>
<td>This study developed a scale to measure e-Banking system success based on the DeLone and McLean Model.</td>
</tr>
<tr>
<td>Suryani &amp; Sumiyana (2014)</td>
<td>System Quality, Information Quality, Service Quality, User Satisfaction, Perceived Ease of Use, Net Benefits, Task Technology Fit, Person Job Fit</td>
<td>Financial Information System</td>
<td>Compared the impact of Task Technology Fit and Person Job Fit factors on IS success. Task Technology Fit variables explain the goodness of fit better than the Person Job Fit variables.</td>
</tr>
<tr>
<td>Torkestani, Mazloomi, &amp; Haghighat (2014);</td>
<td>System Quality, Information Quality, Service Quality, Organizational Learning, Performance</td>
<td>Information Systems (Insurance Companies)</td>
<td>The empirical analysis suggests a significant relationship between IS success factors, Organizational Learning, and Performance.</td>
</tr>
</tbody>
</table>

Overall, the DeLone and McLean (1992, 2003, and 2004) models were found to be robust and were supported by the empirical evidence in most of the studies based on the work of DeLone and McLean. Studies that focused on the independent variables suggested by DeLone and McLean (2004) are discussed in the subsequent sections.

2.5.2 System Quality

System Quality is defined as the “desirable characteristics of the system e.g., ease of use, privacy and security, reliability, customization etc” (Petter et al., 2013).
Website elements are used to convey information to customers and can also serve as a catalyst for increasing website stickiness or repeat visits (Song & Zahedi, 2005). System Quality is a strong predictor of e-Commerce quality (Palmer, 2002; Wang, 2008; and Wolfinbarger & Gilly, 2003).

System Quality involves system specific characteristics (DeLone & McLean, 2004). DeLone and McLean (2004) suggest that usability, customization, privacy, security, reliability, and transaction ease are important factors that determine System Quality. System Quality has been explored in various studies as a determinant of e-Commerce success and was found to influence its user’s opinion about and experiences with the website (Song & Zahedi, 2005).

Researchers have used various metrics to measure the System Quality of an e-Commerce website. Agarwal and Venkatesh (2002) measured System Quality in terms of content, ease of use, promotion, made for the medium (personalization), and emotion. Agarwal and Venkatesh (2002) found content to be the most important determinant of System Quality followed by ease of use, promotion, personalization and emotion. Dennis, Fenech and Merrilees (2004) suggest that e-Commerce system’s characteristics can be defined in terms of three comprehensive measures namely navigability, atmospherics, and interaction. Valvi and West (2013) define e-Commerce System Quality in terms of its visual presentation, pleasure and attractiveness of the website design. Similarly Zhang et al. (2001) and Tarafdar and Zhang (2005) emphasized the importance of privacy and security as important characteristics of e-Commerce System Quality. This is because e-Commerce system transactions involve online payment. Therefore, we consider usability,
interactivity, and privacy and security as dimensions of System Quality for the purpose of this dissertation.

Usability is defined as “the perceived ease of navigation” (Flavian et al., 2006). The variable of usability has been explored in many studies as an important determinant of IS success (Agarwal & Venkatesh, 2002; Conger & Mason 1998; Nielsen, 1994, Shackel, 1991; and Wang, 2008). The usability of an e-Commerce website influences user’s behavior and interaction with the system, and is an important determinant of the system’s success (Pelet & Papadopoulou, 2012). Hassan and Li (2005) define usability of a website in terms of its screen appearance or layout, accessibility, and navigation. It can be observed that most of these measures are task specific or utilitarian in nature, much in line with the concept of utility (Flavian et al., 2006).

Some studies have also found usability to be insignificant in predicting the System Quality like Green and Pearson (2006). However the authors argue that they may not have included all dimensions of usability and the student sample used might not reflect the opinion of the broader user base of e-Commerce.

Interactivity is defined as “a psychological state experienced by a site-visitor during the interaction process” (Wu, 2006). Wu (2006) suggests that interactivity is comprised of perceived control, perceived responsiveness and perceived personalization of the website. Interaction adds a unique dimension to the website. It is an almost instant exchange of opinions among the customers and the business. This leads to creation of a dialogue in the form of opinion and complaints (Chiu, Hsieh, & Kao, 2005). However, Palmer (2002) in his study found no significant effect of interactivity on overall website
satisfaction. Palmer (2002) suggests that the date of the study which is 1997 may have been a reason for the insignificant results. Sullivan (1999) defines interaction as level of dialogue generated between the visitors of the website and its owners. Similarly, Dennis et al. (2002) consider interaction as an amalgam of learning, participating, acting, two-way communication, feedback, enjoyable experience, and query handling. However, Jiang, Chan, Tan and Chua (2010) consider interactivity in the e-Commerce context to comprise of active control and reciprocal communication (also called two-way communication). Interactivity in the online purchasing environment serves two important purposes, one is related to task completion or mechanical interactivity depicted by active control and the other is related to social interactivity depicted by two-way communication (Hoffman & Novak, 1996 and Jiang et al., 2010). Therefore, this study also considers interactivity in terms of active control and two-way communication.

Privacy and security assurance created by trust has often been the most important determinant of overall quality for e-Commerce websites (Tarafdar & Zhang, 2005 and Zhang et al., 2001). Some researchers define trust in terms of the two important issues as they relate to e-Commerce systems namely security and privacy (Molla & Licker, 2001). Studies have also demonstrated that trust with the e-Commerce firms leads to e-loyalty (Kim, J., Kim, M., & Lennon, 2007). DeLone and McLean (2004) suggested privacy and security to be important System Quality metrics in the e-Commerce domain. This is because transacting with an e-Commerce system creates additional security and privacy fears among customers due to the inability to see, feel, touch, and try on products prior to a purchase (Kim et al., 2007). Pavlou, Liang & Xue (2007) argue that issues related to privacy and security that create uncertainty for the users should not only be focused as a
background mediator and that it deserves a comprehensive evaluation. Research centered on privacy issues of Internet use has also explored a more expansive scope covering issues like culture and public policy (Dinev & Hart, 2006). Privacy threats occur when the IS controller (e-Commerce firms, government agencies etc) use the collected personal information of the users of such systems for their own use without the knowledge of users (Culnan & Armstrong, 1999).

Some researchers have also explored System Quality from the web designer’s perspective. For example, Tan, Tung, and Xu (2009) interviewed twenty web-designers to find out factors they considered important for designing e-Commerce websites. Tan et al. (2009) found that various aspects of website design like presentation of information, visual appearance, updates, advertisements/ pop-ups/ animation, text usage, downloading time, headlines, are critical for web design.

Many studies have included content as a System Quality variable (Hassan & Li, 2005). However, this study includes content in the Information Quality dimension. Some studies also found System Quality to be insignificant in predicting e-Commerce success. Notably, Schaupp, Belanger, and Fan (2009) did not find System Quality as a significant predictor of overall quality of website. Schaupp et al. (2009) is one of the few studies which found that System Quality did not significantly influence system’s success. In light of number of other studies that found System Quality to be a significant variable for Information System’s success, the System Quality dimension is considered as an important contributor to a positive User Experience. As such, this study conceptualizes
System Quality in terms of usability, interaction, design, customization, and privacy and security features.

2.5.3 Information Quality

"Information Quality captures the information content of the website and includes all the information produced by the system" (DeLone & McLean, 2004).

For success in the e-Commerce domain firms need to focus on Information Quality (Xu & Koronios, 2004). High quality information at a relatively low cost is the main advantage for which customers use the Internet (Bakos, 1997; and Hasley & Gregg, 2010). Studies have found Information Quality to be a significant determinant of a user’s e-Commerce evaluation (Teo & Wong, 1998). An e-Commerce system creates an electronic market place where information can be obtained very easily. Bakos (1997) studied the search cost of buyers in the electronic marketplaces with regard to differentiated as well as un-differentiated products and found that high quality information in electronic marketplaces helps buyers to compare different seller offerings and access standardized product descriptions which in turn increases the market efficiency. As compared to brick and mortar retail, the scope and the context of information changes significantly in the e-Commerce environment. Information Quality is critical for e-Commerce firms as there is no face-to-face interaction and information available on the website serves as a risk reduction tool for the user (Tojo & Matsubayashi, 2011). In fact, the initial impression about the quality of the products and services in the e-Commerce space are determined by the quality of information rather than the product or service themselves (Xu & Koronios, 2004).
The provision of information for consumer’s decision making is of primary importance to the firm (Ariely, 2000). In doing so firms need to decide how much and what type of information to present to the consumer? However, provision of information alone is not sufficient. Excessive information or information overload in the online environment leads to stress on the user’s processing resources and can create an inability on part of the consumer to utilize information (Jones, Ravid & Rafaeli, 2004 and Lurie, 2004).

Increasing the transparency of information reduces the overall cost of the user by decreasing the search cost, leads to consumer welfare and has the potential of bringing repeat business to the e-Commerce firm (Lynch & Ariely, 2000). Good Information Quality is a corporate asset and is important for improving an e-Commerce firm’s competitive position in the market (Xu & Koronios, 2004). Research also suggests that increasing Information Quality usability decreases price usability (Lynch & Ariely, 2000) which means that e-Commerce firms having high quality information can command price premiums.

One major advantage for people shopping online is the reduced search cost for products and product-related information (Lynch & Ariely, 2000). In a study of the wine market, Lynch and Ariely (2000) found that the consumers showed more liking towards wines that they had seen online and suggested that more information should be provided to the consumer to increase sales.

Further, researchers have identified two types of cues that e-Commerce users follow namely utilitarian and hedonic cues. These cues drive a user to an e-Commerce
website (Kim et al., 2007). Utilitarian cues are highly task-relevant and help consumers achieve their shopping goals. Hedonic cues are irrelevant to the shopping goals but enhance the pleasure of the shoppers e.g. the visual appeal, music etc of the website (Childers, Carr, Peck, & Carson, 2001). In this study Information Quality measurement is based on particularly utilitarian cues whereas the hedonic cues are included under design dimension in the System Quality variable.

2.5.4 Service Quality

Wang (2008) defines e-Commerce Service Quality as “E-Commerce Service Quality is also a multidimensional construct, which includes the dimensions of reliability, responsiveness, assurance and empathy.”

One of the major determinants of e-Commerce success is the Service Quality, which seems to have evaded various models of the IS success in specific areas (Petter et al., 2013). Researchers have observed that the IS research is increasingly adopting the service oriented thinking (Bardhan et al., 2010). With the impetus shifting to services from technology, an interdisciplinary approach in IS Research is required (Rai & Sambamurthy, 2006).

Researchers have developed a number of measures for evaluating the overall Service Quality for e-Commerce (Chang, Cheung, & Lai, 2005). Service Quality influences the overall success of the e-Commerce system (Wang, 2008). In fact studies have suggested that Service Quality is more dominant in shaping user satisfaction and re-use intention as compared to the System and Information Quality (Wang, 2008). Service Quality results from the comparison of user’s expectations and the system’s performance
An important tool to measure Service Quality used by many studies is the SERVQUAL scale (Parasuraman, Zeithaml, & Berry, 1988). The SERVQUAL scale has been widely used for measuring Service Quality in the e-Commerce domain (Chang et al., 2005). SERVQUAL is a five dimensional scale for measuring Service Quality that includes tangibility, empathy, responsiveness, assurance, and reliability measures.

Ahn, Ryu, and Han (2007) define Service Quality in terms of the e-Commerce website’s “provision of multiple communication mechanisms for accepting user complaints and their timely resolution; it also involves assisting users in being effective, suggesting complementary products or service, and jointly solving problems.” Ahn et al. (2007) studied Service Quality in relation to technology acceptance behavior. Their study suggests that good Service Quality can enhance a user’s overall evaluation of the e-Commerce system.

In summary, Service Quality is very important for users and warrants more focus from IS researchers (Petter, et al., 2013). Petter et al. (2013) in their extensive review of system success measurement contend that Service Quality of an IS, is under-researched and needs to be examined in future. We use the Service Quality dimensions suggested by Wang (2008) based on the SERVQUAL scale namely reliability, assurance, responsiveness and assurance. It must be noted that Service Quality in this study is scoped to the web-interface service and does not include any face to face interaction with the employees of the e-Commerce firm.
2.5.5 Socialness Dimension

Socialness is defined as “the extent to which consumers detect socialness on a website” (Wakefield et al., 2011). This definition is derived from Wang et al. (2007) who also define socialness of a website “as the extent to which consumers detect social presence as a result of the use of social cues on a retail Website.”

Socializing with others results in enjoyment and contemporary Information Systems are capable of fulfilling this socializing urge of people (Junglas et al., 2013). An interesting phenomenon in website design for e-Commerce that has recently gained magnitude is the incorporation of social cues in the form of collaboration with others, helpfulness and familiarity (Wakefield et al., 2011; and Wang et al., 2007).

Social presence in the communication literature refers to the awareness of “being together with others” (Qiu & Li, 2008). This concept can be generalized to an interaction with a system which is ingrained in Daft and Lengel’s (1984) Media Richness Theory (as cited in Shen (2012)). The extent to which a medium lets a user sense the psychological presence of others is referred to as the Socialness of the medium (Fulk, Steinfield, Schmitz, & Power, 1987). The users feelings of Socialness are formed via the process of communication due to the high level of interactivity of the medium (Qiu & Li, 2008). Lombard and Ditton (2006) define the ‘social’ element of a communication medium as a subjective evaluation that refers to the extent to which a user perceives the medium to be warm, intimate, sensitive, personal and sociable. Along a similar vein, Qiu and Li (2008) suggest that the contemporary e-Commerce websites have enhanced their Socialness by including features like collaborative browsing, user forums, instant messaging, Web 2.0
technology tools like Wikis, blogs, Tags etc. As such, Socialness is a function of the system (Junglas et al., 2013).

The concept of collaborative online shopping i.e. where users shop with remotely located shopping partners like family and/or friends is emphasized in recent literature (Kim et al., 2013). There are few studies that have examined the effect of collaborative shopping in enhancing the User’s Experiences of the e-Commerce system (Kim et al., 2013). Wang et al. (2007) and Wakefield et al. (2011) use the term ‘Socialness’ to describe a user’s Socialness perception about a website. Website Socialness creates a social response from the user and leads to enjoyment and stickiness towards the website (Wakefield et al., 2011). Earlier work based on the Social Response theory (Moon, 2000) suggests that even though people are aware that computers are not humans, they still treat them as social actors. Wang et al. (2007) established that e-Commerce websites can be induced with Socialness by employing cues enabled by rich media like voice, interactivity and language. Scott (1987) describes the social qualities of a system in terms of its ability to take actions, create purpose and to utilize the resources on behalf of the organization. In a study of effects of Socialness perceptions of the website on the users beliefs, attitudes, and behavioral intentions, Wakefield et al. (2011), found that website Socialness strongly influences user intentions and enjoyment and that there is little variance across shopping contexts.

Socialness of the website can be a differentiator for e-Commerce firms in future as the e-Commerce firms currently are focused on price wars and merchandise availability (Wakefield et al., 2011). Jahng, Jain and Ramamurthy (2007) contend that
lack of social interaction with the representatives of the firm hinders the user’s adoption of e-Commerce. Further, Jahng et al. (2007) suggest that the inclusion of interactive social tools within the website can encourage users to adopt e-Commerce. Some researchers suggest the inclusion of avatar-like agents (Bailenson, Yee, Brave, Merget, & Koslow, 2007) or recommendation agents (Knijnenburg et al., 2012) to induce more Socialness in the website. Bailenson et al. (2007) in their study based on a human-computer-interaction found that people made a distinction between virtual people and non-human objects. This means that even when people know that virtual people or avatars are not real, people behave in a humane way with such virtual avatars suggesting thereby that humans can sense a social response from an interactive system. Similarly, Kim et al. (2013) examined the effect of embodiment and media richness on e-Commerce User’s Experience and found them to be significantly influential.

Wakefield et al. (2011) explored the effect of Socialness of website on the attitude, beliefs and behavioral intentions of user intention and found a strong relation between these aspects and Socialness of the website. Wakefield et al. (2011) suggests the inclusion of human-like characteristics like recommendation agents, avatars etc. to the website to increase its Socialness.

Lee, Park, and Han (2011) conceptualize Socialness in a narrow sense in terms of only the informational cues available from other users and define informational social influence (Socialness) as “accepting information or advice from a person who may not have previously been known as a friend or colleague.”
Shen (2012) focused on websites specifically providing social cues to users for e-Commerce systems and suggests that the social cues help e-Commerce systems to increase their use and the sales. These websites referred to as ‘social commerce’ websites are “technology-enabled shopping experience where online consumer interactions while shopping provide the main mechanism for conducting social shopping activities.”

Junglas, Goel, Abraham, and Ives (2013) define Socialness as “an individual’s desire to socialize that is satisfied through a system that is able to provide those social interactions with others.” The importance of Socialness for e-Commerce websites can be understood by examining the Media Richness Theory (Daft & Lengel, 1986; and Daft, Lengel, & Trevino, 1987) discussed below in Section 2.5.5.1.

2.5.5.1 Media Richness Theory

The social impact of a communication medium has been studied in early literature. For example, Short, Williams & Christie (1976) (cited in Burke & Chidambaram, 1999) contend that certain media are able to convey social presence better than others. In fact, earlier work on computer mediated communication (Rice & Love, 1987) found that the computer based media of those times were lean and weak in transmitting visual and non verbal cues and thereby diminished the Socialness dimension of the medium (Burke & Chidambaram, 1999). Similar results were reached at by Novak et al. (2000) who argued that e-Commerce interaction back then did not have enough challenge to induce telepresence. However, some researchers argued that with time, computer-mediated communication has the potential to develop richness like face-to-face communication (Burke & Chidambram, 1999).
The Media Richness Theory deals with the ability of a channel to convey a message in terms of varying amount of message content (Daft & Lengel, 1986; Daft et al., 1987). Whereas face-to-face medium is considered as the richest, e-mail is considered as a lean medium as it does not accompany cues like body language, gestures etc. The Media Richness theory is a well researched area in IS (Simon & Peppas, 2004). Earlier research on computer mediated communication considered computer based media as lean (Burke & Chidambram, 1999; and Walther, 1992). In their original theory of Media Richness, Daft and Lengel (1986) suggested that rich medium is suited to equivocal i.e. highly ambiguous tasks and lean medium is good for non-equivocal task.

There is a need to relook at the Media Richness Theory to better understand the Socialness dimension that some researchers argue is present in the e-Commerce websites of today (Wakefield et al., 2011). Even in the earlier stages of development of e-Commerce, few researchers such as Walther (1992) argued that computer mediated communication can lead to the exchange of relational or social information when the length of such communication is extended. Further, Burke and Chidambaram (1999) concluded in their experimental study of computer mediated communication that social presence of a medium is proportional to its cue carrying capacity i.e. more the cues more will be the Socialness felt by the users.

The recent advancement in the Internet technology has created a much richer medium than its predecessors (Kim, 2011). The enhanced interactivity, quality and quantity of information have augmented the richness of the Internet and Internet based systems like e-Commerce (Simon & Peppas, 2004). Recent studies have started to focus
on the Media Richness theory in wake of the interactivity and richness that the Internet has embodied. Liu et al. (2009) examined the impact of media richness and flow (cognitive involvement) on e-learning technology acceptance and found a positive relation between media richness, flow and acceptance levels of e-learning consumers. Simon and Peppas (2004) in their study of 555 subjects found a positive relation between higher levels of satisfaction with media rich sites (those with pictures, audio, and video) compared to lean sites (text based). Liu et al. (2009) suggest that a user’s concentration levels may be enhanced by media richness. In a study on media richness of e-Commerce websites, Simon (2004) established that richer sites satisfied customers more than leaner ones. Research needs to focus on how users are evaluating the rich media tools like 3D display of products, virtual fitting rooms, which the e-Commerce websites are incorporating.

Simon and Peppas (2004) call for further research into the impact of the now richer Internet medium on the users of this technology. e-Commerce firms should take advantage of the richness of the Internet medium, to enhance the quality of their Users’ Experience (Simon and Peppas, 2004).

2.5.5.2 The relevance of Socialness for User Experience Evaluation

Socialness is used to describe the occurrence of people treating computers as social actors (Nass & Steuer, 1993). Socialness perception evokes a social response and leads to an enjoyable Users’ Experience (Wakefield et al., 2011) of the website. Socialness of computer technology has been researched in the past (Wakefield et al., 2011). The work of Nass, Fogg, and Moon (1996) and Nass and Moon (2000) suggest
that interaction with computer technology induces a social response from the users. Wakefield et al. (2011) suggest that an e-Commerce website can induce Socialness by including online chat, customer recommendations, user guides, search engine etc. These applications are text or voice based and may also include social cues which the user responds to. In case the user perceives such facets of the website as social, he may assign an attribute like helpful or informative to an Information System which is indeed a human attribute.

Interactive systems like e-Commerce websites can influence users at levels of social experiences, self-expression and differentiation from others (Karapanos et al., 2009). Huang (2012) studied virtual goods using the Stimulus Object Response (SOR) model and found that interactive and social stimuli affect User Experiences and in turn their purchase intention. Huang (2012) suggests that relational or social stimuli can enhance Users’ Experience with virtual goods and a focus on social stimuli increases a user’s affective involvement, flow experience and cognitive involvement with interactive products. Huang (2012) suggested that future research on User Experience should focus on the Socialness aspects of the IS.

Wakefield et al. (2011) call for future research to focus on e-Commerce website features that may produce social cues and influence the User’s Experience. Responding to this call by researchers, this study posits that the Socialness dimension of the website should be tested along with the independent variables suggested by DeLone and McLean (2004), to give a holistic understanding to the concept of User Experience of an e-Commerce system.
2.6 Research Gap and Research Questions

The DeLone and McLean models are the most commonly cited models in IS success research (Crowston, Howison, & Annabi, 2006; Dorobat, 2014; and Wu & Wang, 2006). The researchers suggest two important contributions of the DeLone and McLean models to understanding of IS success. One that they provide a logical method of categorizing the numerous IS success measures and second that they suggest causal and temporal interdependencies among these categories (Dorobat, 2014; McGill, et al., 2003).

As can be observed from Table 2.5, the major focus in the studies based on the DeLone and McLean models has been the utilitarian evaluation of the system, with a dearth of studies that focus on the ‘hedonic’ and the ‘social’ dimensions of an Information System in combination with the traditional utilitarian measures.

Few studies that have used a combination of social and utilitarian measures like Bock, Shin, Suh, & Hu (2009); Cecez-Kecmanovic, Kautz, & Abrahall (2014); and Lin (2008), have conceptualized the social dimension of an IS in terms of the social influence experienced by the users from their social circle. In this study, “Socialness” is conceptualized as a system characteristic enabled by technology (Junglas et al., 2013) for example the hardware, software and networks that enable social interactions even beyond a user’s immediate social circle. It is therefore argued, based on the literature review, that DeLone and McLean models need to incorporate the measures based on hedonic and social characteristics of system in order to more comprehensively measure the user’s evaluation of the contemporary Information System.
Table 2.5: Research based on DeLone and McLean Models and Measures Used

<table>
<thead>
<tr>
<th>Measures</th>
<th>DeLone &amp; McLean Models</th>
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<tbody>
<tr>
<td><strong>Utilitarian</strong></td>
<td>Agourram &amp; Ingham (2007); Alshibly (2014); Balasubramanian, Jagannathan, &amp; Natarajan (2014); Bernroider (2008); Bradley, Pridmore, &amp; Byrd (2006); Chong, Cates, &amp; Rauniar (2010); Crowston, Howison, &amp; Annabi (2006); Eom, Ashill, Arbaugh, &amp; Stapleton (2012); Floropoulos, Spathis, Halvatzis, &amp; Tsipouridou (2010); Gable et al. (2003); Gable et al. (2008); Garrity, Glassberg, Kim, Sanders, &amp; Shin (2004); Halawi, McCarthy, &amp; Aronson (2007); Holsapple &amp; Lee-Post (2006); Hwang, Windsor, &amp; Pryor (2000); Iivari (2005); Khalifa &amp; Liu (2004); Khayun, Racham, &amp; Firpo (2012); Kim, Peterson, &amp; Kim, (2000); Landrum, Prybutok, Kappelman, &amp; Zhang (2008); Lee, S. M., &amp; Lee, S. H. (2012); Lee &amp; Kozar (2006); Lin &amp; Shao (2000); Lin &amp; Wang (2012); Torkestani, Mazloomi, &amp; Haghighat (2014); McGill, Hobbs, &amp; Klobas (2003); Molla &amp; Licker (2001); Petter &amp; McLean (2009); Rai, Lang, &amp; Welker (2002); Raymond &amp; Bergeron (2008); Roh, Ahn, &amp; Han (2005); Sabherwal, Jeyaraj &amp; Chow (2006); Sedera &amp; Tan (2005); Sedera &amp; Gable (2010); Sedden &amp; Kiew (1996); Sorum, Medaglia, Kim, Murray, &amp; DeLone (2012); Suryani &amp; Sumiyana (2014); Urbach et al. (2009); Wang (2008); Shin (2003); Wang and Liao (2008); Wu &amp; Wang (2006); Zhang et al. (2002)</td>
</tr>
<tr>
<td><strong>Utilitarian, Hedonic, and Social</strong></td>
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*The social component is measured in terms of the social influence from the users’ social circle and not as a characteristic of the system.*
Few recent studies have focused on the three dimensions of usability, hedonism and socialness for example Kohler, Fueller, Matzler, & Stieger (2011); Junglas et al. (2013); Lowry et al. (2013); Shen (2012); and Wakefield et al. (2011). Some of these studies focused specifically on hedonic Information Systems’ evaluation like Lowry et al. (2013) and Shen (2012) and hence ignored the utilitarian Information Systems. Van Der Heijden (2004) categorized Information Systems as hedonic and utilitarian, thereby drawing a clear distinction between the two categories of Information Systems. However, the Information Systems of today especially the ones that are used for home use, e-Commerce, and mobile computing possess characteristics that are both hedonic and utilitarian (Lingyun & Dong, 2008). Therefore, the dichotomous categorization suggested by Van Der Heijden (2004) has become hazy and overlapping. Thus, researchers should focus on developing measures with both utilitarian and hedonic characteristics in order to capture a user’s true evaluation of the system. Other researchers have contributed in terms of conceptual studies based on hedonic, social, and utilitarian dimensions of system evaluation without the empirical evidence like Kohler et al. (2011). Bernardo (2012) measured e-Service quality in terms of hedonic and utilitarian and did not consider socialness as a specific system characteristic.

Junglas et al. (2013) and Lingyun and Dong (2008) proposed the combination of social and hedonic measures for system evaluation based upon the TAM models. Although the TAM has been extensively used in IS literature, some researchers argue that TAM limits its evaluation to technology adoption whereas the DeLone and McLean models go beyond the dimensions of usefulness and ease of use (Eom, Ashill, Arbaugh, & Stapleton, 2012). The dimension of “Service Quality” (DeLone
Another gap in research based on user’s evaluation of Information Systems is that even when users seek to gain hedonic benefits from the use of IS, little consideration has been given to the construct of User Experience in the vast literature on e-Commerce (Georgiadis & Chau, 2013). The conceptual models for the construct of User Experience which focus on the hedonic and experiential evaluation of an Information System are scarce as compared to the well developed frameworks in usability research (Beauregard & Corriveau, 2007).

The concept of User Experience has generated interest from system designers, business people, interaction design firms, and also the strategy providers for e-business in recent times (Forlizzi & Ford, 2000). The concept of User Experience is an emerging research area in the HCI literature (Hassenzahl & Tractinsky, 2006). These studies have focused on the concept of User Experience and have attempted to understand its various dimensions, facets, and impacts. However, much work still needs to be done to understand User Experience with Information Systems (Forlizzi & Ford, 2000). Notably, there is lack of consensus among researchers even with regard to the definition of User Experience (see Appendix A). Some researchers contend that the reason for not having a standard definition of User Experience is the sheer complexity of the construct (Beauregard & Corriveau, 2007 and Swallow, Blythe, & Wright, 2005).

The construct of User Experience needs to be emphasized both in industry and academia (Beauregard & Corriveau, 2007). Such a focus on User Experience can
provide businesses with sustainable competitive advantage (Ding et al., 2011; and Roth & Menor, 2003) as User Experience is unique to each user and is hard to imitate for the competitors. Some researchers argue that e-Commerce firms must create a unique User Experience that focuses on both the utilitarian and the hedonic goals of the user (Kim, 2011).

A User’s Experience in the e-Commerce contexts encompasses the entire customer experience as the user is not only a technology user but also the consumer of the service (Cho & Park, 2001; Georgiadis & Chau, 2013; and Parthasarathy & Bhattacharjee, 1998). The user of technology has to fulfill the dual role of interacting with the service interface and with the technology that brings it. Consumer research is rich with studies that focus on both hedonic and utilitarian dimensions (Batra & Ahtola, 1990; Deng et al., 2010; Hirschman & Holbrook, 1982; Mano & Oliver, 1993; Van der Heijden & Sorensen, 2003). However, the same is not the case with IS research (Hassenzahl & Tractinsky, 2006).

The construct of User Experience needs to be emphasized because the e-Commerce system users have to fulfill the dual role of interacting with both the technology and with the service interface of such systems (Cho & Park 2001; Georgiadis & Chau, 2013; and Pathasarathy and Bhattacharjee 1998). Hassenzahl et al. (2000) emphasize that usability measures should combine both enjoyment and satisfaction as the design goals. This would serve as a step further in enhancing User’s Experience with a system and hence improve usability (Hassenzahl et al., 2000). Thus, there is increased impetus on the concept of User Experience both from the industry and academia alike due to the limitations of traditional usability frameworks.
that focus only on performance and user cognition, neglecting the non-utilitarian aspects of the interaction (Law et al., 2009).

The utilitarian and hedonic aspects of system use are not necessarily incompatible (Beauregard & Corriveau, 2007). Hassenzahl, Platz, Burmester, and Lehner (2000) emphasize that usability measures should combine both enjoyment and satisfaction as the design goals. This would serve as a step further in enhancing User Experience with a system and hence improve usability (Hassenzahl et al., 2000).

User Experience is a consequence of system characteristics and the personal characteristics of the user (Knijnenburg et al., 2012) and therefore the DeLone and McLean IS success metrics should be combined with User Experience to arrive at a holistic measure for evaluating e-Commerce systems.

From the above discussion it can be noted that User Experience can be used as an important success metrics for IS as it enriches the utilitarian measures with the hedonic and experiential dimensions. The construct of User Experience therefore, needs to be integrated within the usability frameworks. Since the concept of User Experience is in its earlier stages in the context of IS, research needs to focus on its various dimensions and its influence on overall satisfaction and System Usage (Kim, 2011).

We, therefore, suggest based on the review of literature that system success research should focus on a combination of hedonic, social and utilitarian dimensions of system use. This research stream is new and needs to be developed with contextual and methodological variety in order to develop into a robust and comprehensive body of knowledge. This study, therefore, proposed an empirical
examination of a model based upon hedonic and social dimensions that were combined with the utilitarian dimensions of an IS within the DeLone and McLean framework.

In summary, it can be argued that both the utilitarian and hedonic goals are necessary for creating engaging e-Commerce systems and can help in improving website stickiness (Deng et al., 2010). This is because users of contemporary IS are interested in those aspects of the IS that go beyond ease of use, ease of learning, and effective task achievement (Hodza, 2009). Dimensions such as the beauty of, and the pleasure derived from the use of a system are also important for users (Dillon, 2002; Hodza, 2009; and Jordan, 2000). Further, differentiation in the e-Commerce domain can be established by addressing the utilitarian, the social and hedonic needs of the users (Kao et al., 2007). It is important to focus on the construct User Experience as it will provide an ability to set strategic goals for design science (Beauregard & Corriveau, 2007).

2.6.1 Research Questions

Earlier studies based on experiential and hedonic measurement of e-Commerce systems found that the systems were not producing effect at various experiential levels like (Novak et al., 2011). However, with the addition of interactive features and the Socialness facets (Wakefield et al., 2011) to e-Commerce systems, studies need to focus experiential effects of e-Commerce systems. This leads us to the first research question.

RQ1. How does interaction with the e-Commerce system impact the user at an experiential and hedonic level?
User Experiences result from the interaction between the user and the system (Berry et al., 2006). Thus all the aspects of this system interaction affect a User’s Experience which is inclusive of the experiential and hedonic benefits resulting from the system use. DeLone and McLean (1992) investigated over 100 IS studies and comprehended them into two dimensions that measure a IS success namely system quality and information quality. Later DeLone and McLean (2004) adapted their model to e-Commerce and added the service dimension to their model. Widely accepted and validated in many IS studies (Sabherwal et al., 2006) the DeLone and McLean (1992, 2004) models are robust and are thus considered appropriate for measuring the interaction with e-Commerce systems. Recently, Petter et al., (2012) have argued for inclusion of social and experiential factors in system evaluation. This stream of research is focused on investigating the effects of social factors in e-Commerce websites (Kim et al., 2013; and Wakefield et al., 2011).

As mentioned earlier, User Experience results from system interaction, all systems characteristics (information, systems, service, and social dimensions) therefore, must be considered antecedent to the generation of such an experience. Hence, it is proposed that User Experience depends on System, Information, Service, and Socialness aspects of the e-Commerce system which is investigated via the second research question.

**RQ2. How do System Quality, Information Quality, Service Quality and Socialness of the e-Commerce system impact its User’s Experience?**

Studies have found that User Experience generated from a user’s interaction with a system significantly influences the user’s intention to use the system (Deng et
al., 2010). Users evaluate systems based upon their direct experiences with the system; develop perceptions; and these lead to behavioral intentions (Deng et al., 2010). The major focus of System Usage research has been on the variable of user satisfaction rather than of User Experience (Deng et al., 2010).

Studies have established the importance of continued System Usage in order to generate long term revenue for the e-Commerce firms (Bhattacherjee, 2001a, b; Flavian et al., 2006). Studies have found that User Experience impacts continual System Usage (Deng et al., 2010). It is important, therefore, to explore the impact of the Users’ Experience on System Usage. This leads us to the third research question which is:

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

In summary, this chapter provides a broad literature review of IS evaluation and User Experience. The major research themes in both the areas were reviewed and the research gap was identified. Some major antecedents of User Experience were identified based on the DeLone and McLean (2004) model. In addition, the Socialness variable was added as an antecedent to User Experience. These antecedents will be further examined in the research model that is discussed in the next chapter.