

# A Model of e-Commerce for Success in the Photography Industry

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**Abstract:** The field of ecommerce is dotted across different paradigms. Despite the demand and wide range of opportunities available, awareness and application of ecommerce technology needs to be improved within the society. Due to the constantly increasing technology and new needs and wants paramount importance has been given to the photography industry as well. In an attempt to gain success within this highly competitive industry many organizations try to adopt ecommerce strategies. The purpose of this study is to develop and test a comprehensive ecommerce framework to gain competitive advantage in the Sri Lankan photography industry.

**Keywords:** ecommerce, competitive advantage, photography.

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## I. INTRODUCTION

The research is mainly focused on providing a framework which the businesses/organizations involved in the photography industry (excluding companies manufacturing photography equipment) can adhere to, when designing information systems (preferably ecommerce systems) to derive competitive advantage.

In-order to reduce the complexity of the study, the DeLone and McLean's' updated "Information System success" model was used with minor modifications to the original model. It must be noted that this study was conducted in the Sri-Lankan context and the results may vary depending on the country and culture.

## II. LITERATURE REVIEW

A considerable amount of literature can found related to "e-commerce", "competitive advantage" and "e-loyalty". But literature related to the field of "photography" which combines the use of "e-commerce" to gain "competitive advantage" in terms of products, services or cost are relatively scarce.

But when the available literature from separate areas (e-commerce, Competitive advantage, and e-loyalty) was put together, a link arose between these literatures. E-commerce is an emergent concept which can be used to gain competitive advantage, and e-loyalty will help to retain and improve the gained competitive advantage.

The referred literature could be categorized into the following sub-groups;

1. Electronic commerce and competitive advantage
2. Deriving value from e business
3. Measuring information system success
4. Marketing mix Vs. Strategies
5. Customer loyalty on the web

### A. *Electronic Commerce and competitive advantage:*

E-Commerce or electronic commerce has a variety of definitions. The following definition can be considered as most suitable working definition which was extracted and adapted to the business to consumer context.

"The process of buying and selling products or services using electronic data transmission via the Internet and the World Wide Web" - (E.W.T. Ngai, F.K.T. Wat, 2002)

Electronic commerce is a blooming field in the current context, in order to develop the knowledge hub and practices to this level many researcher have contributed in fullest. Among them, Chung Shing Lee, Michael Bloch, Yves Pigneur, Arie Segev, William H. DeLone and Ephraim R. McLean are noteworthy.

Chung-Shing Lee (2001) has introduced Electronic Commerce as a ‘disruptive innovation’. A business cannot take long term sustainable competitive advantage over E-commerce. Thus, without an understanding of the strategic logic of “digital economy” a company might fail to take full advantage over the disruptive power of e-commerce. In-order for a business model to be successful, it should increase the “switching costs” for customers and decrease the “Transaction costs”.

**B. Deriving value from E-business:**

The issues of understanding the business value an organization can derive with the help of E-Commerce has been addressed by Michael Bloch, Yves Pigneur and Arie Segev (2005). They have presented a framework consisting of 10 ten components of the business value of e-commerce. This framework has also been linked with the Porter’s model for competitive advantage.

Ecommerce systems can be used to promote the products among potential customers, e-commerce can be identified as a new sales channel for existing products, using a commonly shared infrastructure like the “internet”, use of e-commerce can lower the cost of delivering information to the customers. Because of the instantaneous nature of e-commerce, time to market or time to reach the customers can be reduced significantly. Through intelligent systems built in to e-commerce, these systems can be used to provide high quality customer service. Effective use of e-commerce will help to build the brand image among the customers. Above mentioned are few of the many ways one can use ecommerce to derive value.

**C. Measuring Information system Success:**

It has been argued that companies invest a lot of money and time in implementing e-commerce but have a hard time evaluating the success and benefits in terms of competitive advantage (William H. DeLone and Ephraim R. McLean, 2004). A model has been presented which can be used to assess the success of an Information System by William H. DeLone and Ephraim R. McLean. According to DeLone and McLean this model can also be modified to assess the success of an E-Commerce system.

The updated model includes six dimensions.

1. System quality
2. Information quality
3. Service quality
4. Use
5. User satisfaction
6. Net Benefits

The original model of DeLone and McLean was widely used in the field of e-commerce. Based on the critiques received 10 years after the original publication, DeLone and McLean updated the model and included 2 new dimensions to the original model. The updated IS success model is shown below.

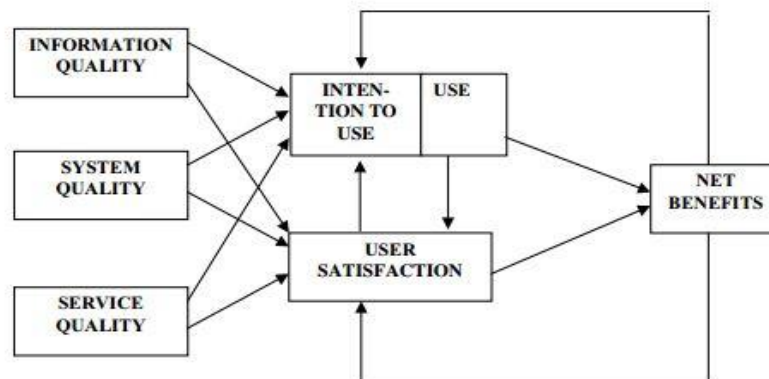


Figure 1: DeLone and McLean's Updated model of IS success

However, this argues that strategies must be employed to retain and improve the gained net benefits. DeLone and McLean have not addressed the issues of “retaining the net benefits”.

This research will be applying the updated IS success model of DeLone and McLean throughout the study to derive a framework through which Sri Lankan photography studios can avail.

Molla and Licker proposed an extended version of DeLone and McLean’s updated IS success model to support the success of e-commerce systems (2002). They proposed an extra dimension called “Trust” which will encourage the “use” and “Satisfaction” of the e-commerce system. This argue the “Trust” component can be represented through “System quality” dimension in the updated IS success model of DeLone and McLean.

#### ***D. Marketing mix vs. Strategies:***

The terms “effective” and “efficient” regarding products and services on behalf of customer satisfaction has been argued by Namchul Shin (2001). Namchul Shin’s study has also been linked with McCarthy’s four marketing mix model and five competitive forces model for the purpose of identifying strategies in terms of gaining competitive advantage to ecommerce companies.

When compared with the work of G.T, Lumpkin Scott B. Droege and Gregory G. Dess (Achieving Sustainable Competitive Advantage and Avoiding Pitfalls, 2002), Namchul Shin provides a comprehensive way of utilizing strategies against the major competitive forces identified by Michael E. Porter. But Namchul Shin has not addressed the downside of these strategies unlike G.T, Lumpkin Scott B. Droege and Gregory G. Dess (2002).

Intel achieved competitive advantage by going into e-business technology from a non e-business environment according to Dien D. Phan (2003).

#### ***E. Customer Loyalty on the web:***

The issues of gaining sustainable competitive advantage on the Web by exploring customer-based strategies and customer retention in e-commerce markets have been addressed by Gianmario and Emanuela (2002). They have argued that the Internet is making information-diffusion and reduces customers’ transaction and switching costs. In order to stick customers to a company website, they have to build new marketing strategies to transform customers’ visits into profitable relations. This certain approach is consistent with buyer-seller relationships, where creation of trust is essential in building sustainable relations (Gianmario and Emanuela, 2002, p.299-309). Gianmario and Emanuela presented a five stages model, combining affiliation and lock-in strategies.

However Marcel Gommans, Krish S. Krishnan and Katrin B. Scheffold have presented a different model in their paper “From Brand loyalty to E-loyalty: A Conceptual Framework” (2001). Their study conveys the importance of building and maintaining customer loyalty in electronic marketplaces along with the brand loyalty. It has been made very clear that brands with strong customer loyalty ensure synergistic advantages for the company. The components of this framework can be fit into the three dimensions of the updated IS success model of DeLone and McLean as follows;

- Website and technology is compatible with “System Quality”
- “Customer service” and “trust and security” are compatible with “Service Quality”
- Components of “value proposition” can be fit into “System quality” and “Information quality”
- “Information quality” and “Service Quality” together can be seen as helpful to “Brand Building”

“The change of the internet technology will definitely force companies to craft new methods and adopt new defines of implementation” according to G.T, Lumpkin Scott B. Droege & Gregory G. Dess (2002). G.T, Lumpkin Scott B. Droege & Gregory G. Dess have presented an overall cost leadership strategy which concentrates attention mainly on company’s value chain resulting in low-cost products and services (2002, p.325-240). By differentiating certain products from those of competitors, companies gain market share through price alone. By cutting down the costs at each point of the value chain, is the best idea behind successful companies (G.T, Lumpkin Scott B. Droege & Gregory G. Dess, 2001).

#### **Summary:**

A lot of literature can be found related to e-commerce and competitive advantage. Most of these literature attempt to propose frameworks to measure the success of existing e-commerce systems. Examples include Chung Ching Lee’s

Analytical framework, DeLone and McLean’s IS success model. Other research papers attempt to emphasize how an organization can derive value or competitive advantage through e-commerce systems.

This could observe, the questions “How the system should be designed to derive value or competitive advantage?” and “What dimensions (out of DeLone’s and McLean’s updated IS success model) contribute the most towards the success of an e-commerce system?” remain unanswered especially in the Sri Lankan context.

Also researcher could observe that no attention in terms of e-commerce and competitive advantage has been given towards the highly fragmented photography industry in a country especially like Sri Lanka where there is continuous adoption of cutting edge technology.

This research aims at providing a blanket framework (using the updated IS success model of DeLone and McLean) for designing an e-commerce system which, photography studios can use to gain competitive advantage.

### III. PROPOSED CONCEPTUAL FRAMEWORK

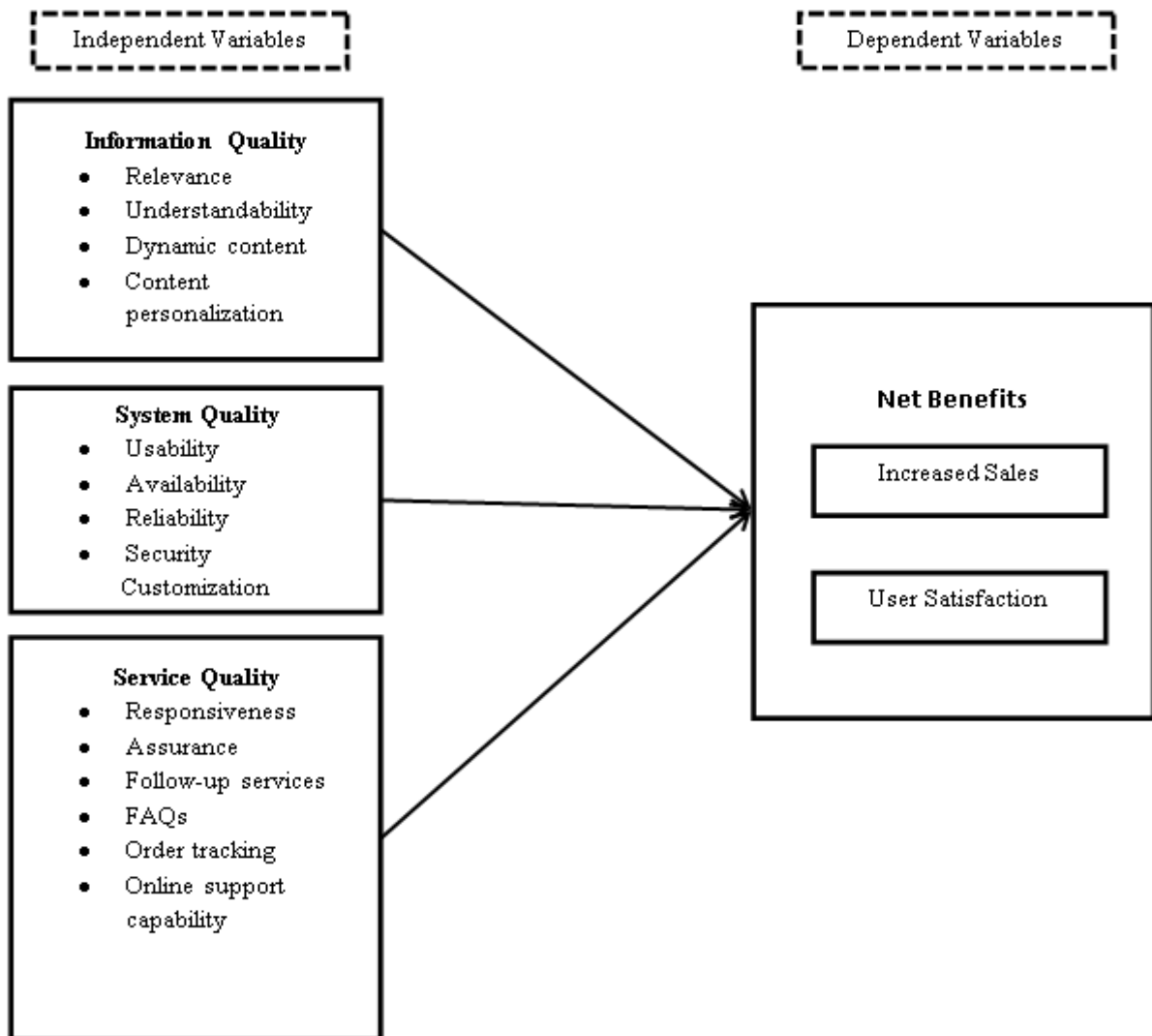


Figure 2: Conceptual framework (Researcher developed)

The above framework was derived from the updated success model of DeLone and McLean (2004). Many researches over the years have validated the interdependencies of DeLone and McLean model. To lessen the complexity of the study, “Intention to use / use” and “User Satisfaction” were excluded from the above model. “User Satisfaction” was included as a measure of “Net Benefits” because ultimately the success of the entire system depends on whether the “customers” are satisfied enough that they would recommend the use of the system to others.

**Information Quality:**

The content issues of the “e-commerce” system will be captured by the IQ dimension.

**Table 1: Information Quality Success Measures**

<b>Success factors</b>	<b>Authors</b>
Relevance	Molla and Licker (2001)
Understand-ability	Molla and Licker (2001)
Dynamic content	Parsons et al. (1998)
Content personalization	Barua et al. (2000)

According to the conceptual model shown above, the relationship between Information Quality and net benefits can be put into a hypothesis as follows;

H1: Information Quality has a positive effect on “Net Benefits”

H<sub>0</sub>: Information Quality has no positive effect on “Net Benefits”

**System Quality:**

System Quality measures the desired characteristics of an “e-commerce system”. The following are the extracted factors which affect the quality of the e-commerce system.

**Table 2: System Quality Success Measures**

<b>Success factors</b>	<b>Authors</b>
Usability (Help features, attractiveness)	Spiller & Lohse (1998)
Availability, Reliability, Security	Molla & Licker (2001)
Customization	Palmer (2002)

The relationship between the System Quality construct and the “net benefits” suggests the following hypothesis.

H2: System Quality has a positive effect on “Net Benefits”

H<sub>0</sub>: System Quality has no positive effect on “Net Benefits”

**Service Quality:**

This dimension measures the quality of the service provided by the service providers. In this study the service providers include photography studios.

The “Service quality” dimension has been emphasized as more important than in the past by DeLone and McLean showing that the users of the system are the customers of the organization. If the quality of the service provided is unsatisfactory then it will translate into lost customers / sales.

Following factors affecting the service quality were extracted from the existing literature.

**Table 3: Service Quality Success Measures**

<b>Success factors</b>	<b>Authors</b>
Quick responsiveness to customer queries, Assurance, Follow-up service	Liu & Arnett (2000)
FAQ sections, Order Tracking/Status Tracking, Online support capability	Molla & Licker (2001)

The following hypotheses were developed from the relationship between Service quality dimension and the Net Benefits dimension.

H3: Service Quality has a positive effect on “Net Benefits”

H<sub>0</sub>: Service Quality has no positive effect on “Net Benefits”

**Net Benefits:**

Net Benefits can be measured in-terms of the users of the system or in-terms of organizational goals. In this study researcher attempts to measure the net benefits from the perspective of the organization. “Increased sales” is the main

objective of proposing an “e-commerce” system. “Customer satisfaction” too can be considered as a measure of “Net Benefits”. The underlying purpose of this study is to gain competitive advantage through ecommerce. “Increased sales” is clearly a measure for Competitive advantage. “Customer Satisfaction” has also been identified as a measure of “Competitive advantage” by Jagdish N. Sheth.

#### IV. QUESTIONNAIRE DESIGN AND SAMPLING

The questionnaire was designed to test the following three hypothesis of this research study.

- H1: Information Quality has a positive effect on Net Benefits
- H2: System Quality has a positive effect on Net Benefits
- H3: Service Quality has a positive effect on Net Benefits

Several factors were extracted from past researches to ensure the validity of this study. The extracted factors were mentioned in the literature review and the hypothesis development sections above. Using these factors, researcher designed the questionnaire to measure the effect which Information quality, System quality and service quality have on Net benefits (competitive advantage).

The questionnaires were distributed online and offline for a period of 20 days. Out of the questionnaires distributed to the people offline, 45 complete responses were obtained and 20 complete responses were obtained online. Altogether 65 responses were collected exceeding the initial target of minimum 35 responses. The new sample size (65 respondents) was viable with a confidence interval of 10.01 (approx. 10) and a confidence level of 95%

#### V. ANALYSIS OF RESPONSES

A reliability test was conducted to test the internal consistency of the data set using PSPPIRE. The test revealed a high internal consistency with a Cronbach’s alpha value of 0.91. Cronbach’s alpha is considered as a measure of reliability (internal consistency) and a value higher than 0.7 suggests that the data set is reliable and consistent. The correlation values were obtained and tested the hypothesis (one-way ANOVA) using PSPPIRE.

Information Quality bared a positive correlation of 0.48 with Net Benefits. This relationship was significant at the confidence level of 95%. All the four components of Information Quality construct bared positive relationships with Net Benefits, although Relevance and Understandability were not significant ( $p>0.5$ ). These data supported the first hypothesis and was compelled to believe that a significant positive relationship existed between Information quality and Net benefits, thus the first hypothesis (H1) was accepted.

**Table 4: Factors, Correlations and P-values**

Constructs	Factors	Correlations	P-values
Information Quality	Relevance	0.32	0.112
	Understandability	0.28	0.116
	Dynamic content	0.32**	0.005
	Content personalization	0.45**	0.008
System Quality	Usability	0.47*	0.012
	Availability	0.26	0.087
	Reliability	0.35	0.125
	Security	0.35	0.079
Service Quality	Responsiveness	0.47**	0.003
	Assurance	0.38*	0.028
	Follow-up services	0.43**	0.009
	FAQ’s	0.23	0.673
	Order tracking	0.30	0.071
	Online support capability	0.30*	0.017

\*( $p<0.05$ ), \*\*( $p<0.01$ )

System Quality was accounted for the least correlation out of the three components. Still the correlation was positive with an R value of 0.45. This correlation was not significant at the confidence level of 95%. All the factors which supported System quality construct bared relatively low correlations with the Net Benefits and were insignificant, except Usability. Usability bared a positive correlation (0.47) with the Net Benefits and was significant at the confidence level of 95%. Thus, the second hypothesis (H2) was rejected, because the evidence was not enough to prove that System Quality had a significant positive relationship with Net Benefits.

Service Quality bared the highest correlation with the Net Benefits out of the three components. System Quality accounted for a correlation value of 0.53 and was highly significant at the confidence level of 99%. All the factors excluding FAQs (Frequently Asked Questions) and Order-Tracking were highly significant and bared positive correlations with the Net Benefits. Consequently the third hypothesis (H3) was accepted.

## **VI. DISCUSSION**

The above analysis revealed that, "Information" and "Service" are the two most valued components of an e-commerce system. From the perspective of a business, these two components would drive users to the e-commerce system and eventually convert these users to customers, According to the results obtained from the data analysis, Information quality was the second most significant component. This suggests that, when quality of the information presented is increased, the Net Benefits will tend to increase too.

Dynamic content and personalized information were valued more than Relevance and Understandability. This suggests customers expect the online system to serve their changing needs in a tailor made manner. Information about the Organization, staff, price schemas, their order details and information about the photography industry, information about new photography technology should be made available to the customers on demand through the system.

System quality was not significant according to the analysis. All the factors which were listed under system quality proved to be ineffective in this context, except usability. Usability is the ability to use the system without any difficulties. Availability, reliability and security cannot be considered as opportunities to gain competitive advantage. Nevertheless, it is noteworthy that security was insignificant only marginally, the relationship (correlation) was positive. The respondents clearly might not have gotten the opportunity to benefit from an online system of a photographic studio. However, system quality is a component which can be easily imitated. Thus the insignificance of system quality in the context of competitive advantage can be justified.

Service quality was the most significant component with the strongest positive relationship with Net Benefits. Customer relationship management strategies can be used to increase service quality. It was well evident that the respondents valued service quality more than any other component in the system. Only FAQ's and Order tracking features were deemed insignificant. Responsiveness, assurance, follow-up services and online support features were highly significant. The result seemed viable because high quality customer service will help the organization to build a brand image which will stand out from the rest. According to Gommans, Kirshnan and Katrins' e loyalty framework, customer service and brand image are important when retaining the competitive advantage in the web is considered.

## **VII. CONCLUSION**

Main objective of this research was to provide a competitive edge to the photography studios operating in a highly fragmented and matured market in Sri Lanka through differentiation. Due to the immense pressure put on them by the evolving competitors, most of the existing studios are losing market share as well as profit. According to M. Porter, only being operationally efficient will not guarantee success for an organization; an organization should differentiate its strategies from their rivals.

Through this research, Delone and McLean's updated IS success model was modified and tested in the context of Sri Lankan photography industry. The research revealed that, Information quality and Service quality are the two most valued components of an e-commerce system. After analyzing the collected data, an overview of an e-commerce system was proposed which would increase the information and the service quality; which will ultimately gain a competitive edge for the photography studios operating in Sri Lanka.

To reduce the complexity of the research, "Use" and "User Satisfaction" constructs of the original IS success model were omitted. Future researches can test the overall success of the proposed e-commerce system using the original IS success

model. This research was conducted from the perspective of the customer. Future researches can be conducted to optimize the system to suit both the customers and free-lancers.

#### **REFERENCES**

- [1] Agarwal, R., and Prasad, 1997 J. The role of innovation characteristics and perceived voluntariness in the acceptance of information technologies. *Decision Sciences*, 28, 557–580.
- [2] DeLone, H, Mclean, R, 2004. Measuring e-commerce success: Applying the DeLone and McLean information system success model. *International journal of electronic commerce*, 9, 31-47.
- [3] Etezadi-Amoli, J., and Farhoomand, A.F. 1996. A structural model of end user computing satisfaction and user performance. *Information & Management*, 30, 65–73.
- [4] Gommans, M, Krishnan, S, Scheffold, B, 2001. From brand loyalty to e-loyalty: a conceptual framework. *Journal of economic and social research*, 3, 43-58.
- [5] Lumpkin, G.T, Droege, B, DESS, G, 2002. Achieving sustainable competitive advantage and avoiding pitfalls. *Organizational dynamics*, 30, 325-240.
- [6] Michael, B, Pigneur, Y and Segev, A. 1996 "On the road of electronic commerce--a business value framework, gaining competitive advantage and some research issues." *Lausanne: Institut D'Informatique et Organization, Ecole des Hautes Etudes Commerciales, Université de Lausanne*.
- [7] Molla, A, Licker, S, 2001. E-commerce system success: An attempt to extend and respecfy the delone and mclean model of IS success. *Journal of electronic commerce research* , 2, 131-141.
- [8] Perez Mira, B, 2010. *Validity of delone and mclean's model of information systems success at the web site level of analysis*. Doctor of Philosophy . Baton Rouge, Louisiana: E.J. Ourso College of Business.
- [9] Phan, D, 2002. E-business development for competitive advantages. *Information and Management*, 40, 581-590.
- [10] Shin, N, 2001. Strategies for competitive advantage in electronic commerce. *Journal of electronic commerce research*, 2, 164 - 172.