

## Success Model of National Kidney Foundation Malaysia (NKF) Website: A Pilot Study

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### Abstract

Malaysia's National Kidney Foundation (NKF) is a health website system which was established by non-governmental organisations related to health management. This system is intended to provide curative, preventative, research, and support services to kidney patient and their families, high-risk populations, and the general public in Malaysia and around the world. An information systems failure results in a poor website system. Using the underlying theory of DeLone and McLean's Success Model, this study aims to offer the results of a pilot examination of the factors affecting the success model on the National Kidney Foundation (NKF) website. This study proposed the success model of NKF website based on recent research on information systems success models, which may assist the National Kidney Foundation (NKF) in enhancing the quality of the system that continuously benefits consumers. The finding is based on thirty-three sufficient samples for a pilot study. After the item deletion phase, the final items can be considered to measure the success model of NKF website. The model comprised of system quality, information quality, service quality, user satisfaction, trust, intent to use, and individual advantage.

**Keywords:** Success Model, Health Websites, Pilot Testing, Kidney Website, Information Success

## 1. Introduction

Today's health care system encourages individuals (including patients and caregivers) to be proactive in making decisions about and taking responsibility for their own health care [1]. Given the prevalence and use of health information on the Web, as well as its significant impact on consumers' health care decisions and overall approach to maintaining health, it is critical that health websites provide consumer-perceived quality health information used for health care consumers making informed health care decisions and other health care related purposes [2]. A systematic reviews of 153 cross-sectional studies evaluating 11,785 websites based on a predetermined procedure was performed and revealed that the quality of online health information is unsatisfactory [3]. Therefore, the Internet does not currently offer laypersons with credible health information. In order to determine which

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aspects of the system contributed to its success or failure, it is necessary to conduct an analysis [4].

Since many people use the Internet to find health information, the National Kidney Foundation Malaysia (NKF) sites are now an option for patients who want to know more. The system helps people, especially people with chronic diseases, use an online information website to find health information. Businesses need the health website to improve, keep up with, and help their customers' health. In recent years, the medical community has started to question the reliability of using health websites to find information. They have told stories of patients who were hurt by misleading data and unreliable sources, or even by negative evaluations of the diagnostic results [5]. In particular, the quality of the information given will have a big effect on the consumer's health, either for the better or for the worse. Most of the system's information needs to be checked by an expert team. The NKF website is made in a way that shows security measures and has more information to keep customer satisfied. The consumer also won't use the website if they don't trust it. But the information needs to be kept safe because the NKF system has sensitive information about which organizations.

Understanding the factors affecting the success of the website use is important because it demonstrates how consumers could view the website effectively and how they can make use of it. In the same way, many people are not aware about the NKF website. So, it is very important to maintain a good website so that the public can acknowledge the benefits and use it without any trouble. The system needs to improve how people can discourse to each other and how they can communicate to NKF. Indeed, the NKF is a very important non-profit organization (NPO) that runs a website with information for kidney patients. This study aimed to identify the factors that influence the success of the NKF website and then conduct a pilot analysis on the selected factors.

## **2. Literature Review**

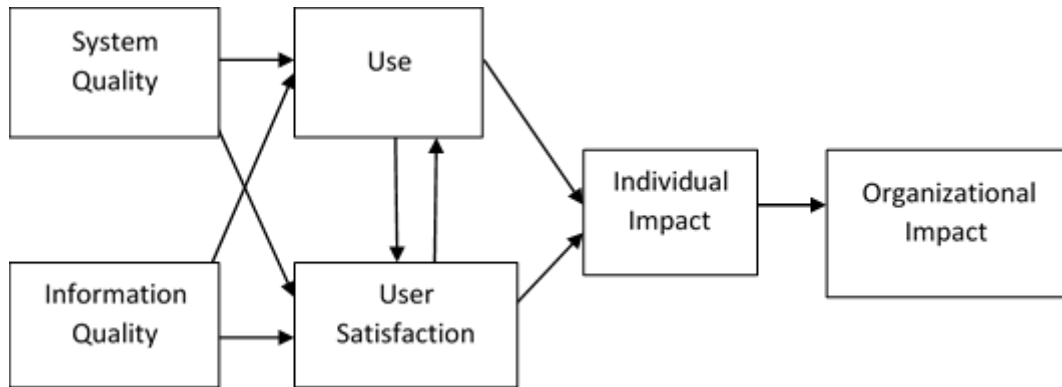
[6] argued that when it comes to information systems (IS), the primary focus of research and practise should be on determining how successful a system is or how effective it is. [7] provided an update regarding the information system, which included details about people, their locations, and other significant aspects of the company or its surroundings. The connection that IS has with technology to gather, process, store, use, and disseminate information. Previous research incorporating IS has been successful in providing direction for ongoing and future study as well as contributing to a more coherent body of knowledge. Beginning in 1992 and continuing through 2003, the success of the IS could be traced back to DeLone and McLean's paradigm of success model. The model for success is presented in the next paragraph.

### **2.1. Success model by DeLone and McLean**

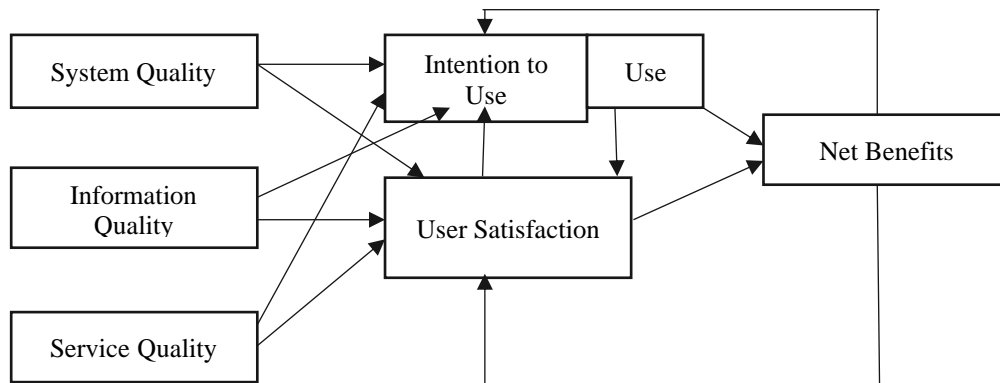
The first information success model appeared in 1992 are proposed by DeLone and McLean [8]. This model examines six variables namely system quality, Use,

information quality, user satisfaction, organization impact and individual impact. The D&M success model in figure 1. Later, the model was revised in 2003 [6] as shown in Figure 2 and the brief description of the factors are provided in Table 1. In 2016 the model was again revised [9]. The updated model replaced term net Benefit with term Net Impact as shown in Figure 3.

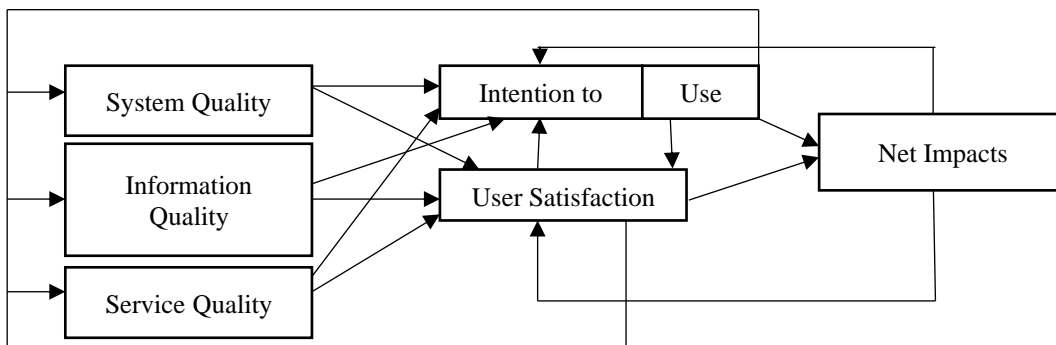
DeLone and McLean's approach has been verified in the setting of teaching hospital information systems in Nigeria, but [10] still advises that it be continually tested and modified in different context.



**Figure 1. Success Model by [8]**



**Figure 2. Revised Success Model by [6]**



**Figure 3. Updated Success Model by [9]****Table 2.3.2: Description success Model [6]**

<b>Factor</b>	<b>Description</b>
Information quality	Web content must personalized, secure, relevant, easy to understand, and complete.
System quality	Usability, availability, reliability, adaptability and response time are examples of qualities that are valued by consumer of a system.
Service quality	Technical competence, reliability, accuracy, responsiveness and technical support personnel
User satisfaction	Measuring our consumer because consumer experience from information retrieval thought.
Use	To measure all of a visit to a web site to navigation within the site and to information retrieval.
Net Benefit	The values of IS to individuals, groups and organizations. This improved productivity and improved decision making.

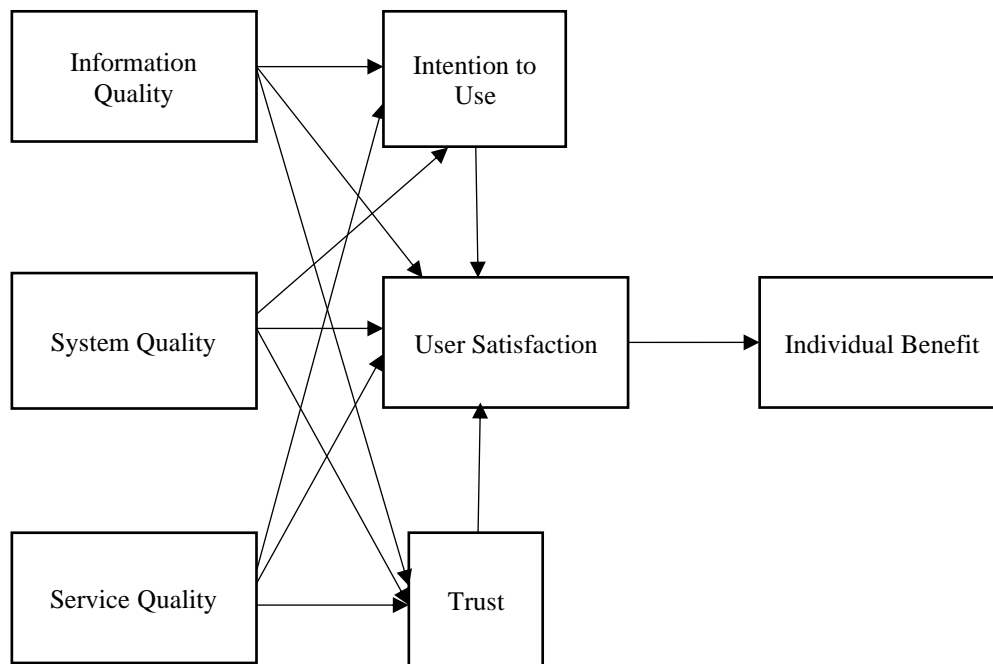
**2.2 Relevant Studies**

Relevant studies of other information systems in healthcare and website domain were also reviewed. Some of the findings are deemed to be useful and should be taken into consideration for the proposed model. Table 1 provides the review summary.

<b>Study</b>	<b>Domain</b>	<b>Factors</b>
[11]	Hospital Information Systems	System Quality, Information Quality, Vendor/Consultant Quality, Individual Impact, Workgroup Impact and Organizational Impact
[12]	Hospital Information Systems	System quality, service quality, trust, intention to use and user satisfaction
[13]	Non-profit Organization (NPO)Website	Information quality, system quality and service quality.

[14]	Electronic Health Record (EHR)	Information quality, system quality, service quality, Use and expectations to future net benefits.
[15]	Patient-centric healthcare system	System Quality, Information Quality, Service Quality, Trust, system Literacy, use, user Satisfaction, Nationality
[16]	System Behavioral Success Model	System performance, information effectiveness, service performance, trust, support and discipline.
[17]	Healthcare Information System	System quality, service quality, Individual impact and user satisfaction.
[18]	Health Information Systems (HIS)	Service quality, Information quality, System quality

In regards to healthcare environment, it was evident that the success model and trust factor can be considered in our proposed model. Hence, we proposed the theoretical success model of NKF website system as shown in Figure 4. The model developed by DeLone and McLean [9] is adapted as the foundation for this investigation. This model consists of seven factors, and trust is an additional factor of the model.



**Figure 4: Proposed Success model for NKF website****3. Methodology**

We undertook a pilot analysis to evaluate the instrument's design and construct validity in order to assure adequate data validity and reliability. In this study, data were acquired from primary sources, as such a quantitative survey was performed. This includes closed-ended questionnaires in order to produce a construct for the development of a quantitative survey instrument. There were two phases involved: the first part entailed the effort of obtaining expert feedback on the questionnaire's content, and in the second part it involved the disseminating the pilot survey to 30 respondents among users of the National Kidney Foundation (NKF). Due to the significance of the questionnaires' contents, three experts were invited to assess the questionnaire. In addition, Google Form, which is a useful tool for creating and distributing the survey, was used to monitor the circulation, since it is a digital platform that is simple and authentic in this period. Then, after receiving responses from respondents, the data were analyzed using the statistical tool software SmartPLS.

The survey comprises 27 items for all seven factors proposed in the model. The seven factors and initial items respectively are: information quality (4 items), system quality (4 items), service information (4 items), trust (4 items), intention to use (4 items), satisfaction (3 items) and individual benefit (4 items). This study employed Cronbach's alpha and outer loading values to evaluate the internal consistency and reliability of the items for each suggested factor.

**4. Result and Discussion**

In the first phase, a pilot survey was conducted, with approximately 30 participants from the general population answering the survey questionnaire. At the conclusion of this survey, nearly 33 usable questionnaires were returned and not included in the statistics. The time allotted for completing the surveys is between 15 and 30 minutes, and the purpose of this survey was to determine the validity of the response to each question. The results of the early analysis of the pilot study are provided in Table 1.

[19] clearly stated that the value of any internal consistency reliability should be above 0.7 in early stages of research, and above 0.8 or 0.9 in more advanced stages, and it would be considered satisfactory as long as the value followed the instructions given. Thus, in this study, the threshold proposed by Henseler et al. [20] was used, and as shown in Table 1 indicators with outer loading values less than 0.6 are assumed to be unreliable and are removed to maintain the dependability of the variables they supported.

Thereafter, the item reduction was performed, followed by re-analysis of Cronbach alpha. The computation was re-run in order to identify the most dependable items that truly measures the performance of the model on the NKF website. Table 2 displays the reliability of a re-run value for both Cronbach alpha ( $\alpha$ ) values and factor loading for each factor. This pilot analysis was completed after the elimination of four indicators with outer loading values below 0.60.

**Table 1. Early Analysis of Reliability**

Factors	Indicators (Items)	Outer Loading Value	Cronbach Alpha ( $\alpha$ ) value
<b>Information Quality</b>	IQ1: The system provides sufficiently detailed and up-to-date information	0.959	0.783
	IQ2: The system provides valid and credible information.	0.919	
	IQ3: The information provided by our NKF website is easy applicable, helpful, and easy to read	0.919	
	IQ4: I can query patient information that I need from our NKF website.	0.223*	
<b>System Quality</b>	SYQ1: The information from the NKF website is available when I need.	0.888	0.840
	SYQ2: The response time of NKF website is efficient and information is quickly retrievable.	0.875	
	SYQ3: The system is appropriately to maintain security.	0.636	
	SYQ4: The NKF website provides necessary features and functions for my the management of my health or as carer to other people's health	0.872	
<b>Service Quality</b>	SQ1: NKF website presents social support and sharing platform for health community.	0.934	0.714
	SQ2: The system service provides about health education and knowledge acquisition.	0.912	
	SQ3: When encountering problems in using a NKF website I can also find someone to help	0.357*	
	SQ4: The website facilities are visually appealing	0.668	
<b>Trust</b>	T1: I trust the information provided in the website	0.950	0.963
	T2: I trust this website to the best option to get online information about health related	0.921	
	T3: I trust this website is secure and safe to use	0.947	
	T4: Overall the website is trustworthy	0.977	
<b>User Satisfaction</b>	US1: I am satisfied with the services provided by NKF website.	0.943	0.934
	US2: I am satisfied with the content provided by NKF website.	0.975	
	US3: In general, I am satisfied with the way that the NKF website have provided the health information.	0.900	
<b>Intention to use</b>	IU1: I intend to use the website to search for information on accommodations.	0.433*	0.638

	IU2: I have the intention to use this website again in the near future.	0.940	
	IU3: I will recommend others to use NKF websites.	0.825	
	IU4: The likelihood of revisiting the website is high.	0.339*	
<b>Individual Benefit</b>	IB1: I believe that following the advice of an NKF website can increase patient's confidence about their treatment.	0.928	0.959
	IB2: I believe an NKF website improves patient or carer access to educational material.	0.962	
	IB3: I believe that an NKF website may improve a patient's social support	0.953	
	IB4: I believe that by following the advice of an NKF website can improve patients' health outcomes.	0.930	

\* requires deletion

**Table 2. Final Result of Reliability Test (After Item-Deletion)**

Factors	Indicators	Cronbach Alpha ( $\alpha$ ) Values	Outer Loading Value	Reliability
<b>Information Quality</b>		0.929		Excellent
	IQ1		0.961	
	IQ2		0.917	
	IQ3		0.928	
<b>System Quality</b>		0.840		Good
	SYQ1		0.888	
	SYQ2		0.876	
	SYQ3		0.636	
<b>Service Quality</b>		0.825		Good
	SQ1		0.940	
	SQ2		0.931	
	SQ4		0.684	
<b>Trust</b>		0.963		Excellent
	T1		0.950	
	T2		0.922	
	T3		0.947	
<b>User Satisfaction</b>		0.934		Excellent
	US1		0.949	
	US2		0.979	
	US3		0.890	
<b>Intention to Use</b>		0.766		Good
	IU2		0.941	
	IU3		0.849	
<b>Individual Benefit</b>		0.959		Excellent
	IB1		0.928	
	IB2		0.962	
	IB3		0.953	
	IB4		0.931	



## 5. Conclusion

The conclusion of this study was reached after analyzing thirty-three samples, which is sufficient for a pilot study. After the phase of item deletion is complete, the remaining items can be taken into consideration to measure the effectiveness of the NKF website's model. The model consisted of the information quality, system quality, service quality, trust, user satisfaction, intention to use, and individual benefit. In line with the purpose of the study, the findings provide validated measurement items based on pilot analysis that can be further used by future research that seeks to quantify the success of using health websites among users, including patients and caregivers. Other researchers can employ the final validated measurement items in the same context of their interest.

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