A Transactional Model for Online Healthcare Organization: Using Actor Network Theory

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ABSTRACT— *Recently in switching the information between patients, staffs and hospitals, the Healthcare Web Portals (HWP) play a crucial role as a media tool to attain the challenging objectives of the quality of patient care and controlling operating costs. Looking wisely at literature shows that most prior researches have only focused on dimensions of e-service quality as the non-human actors. However, due to socio-political reasons, online HOs are positioned in a heterogeneous network, the social and technical or in other words human and non-human actors are equally important in the network. The main objective of this research is to propose a model for the online Healthcare Organizations (HO) with the view to make patients more attractive, trust and loyal to the online HO. Therefore, based on the extend review of literature, the initial research model adapted from the online shopping context and will extend to the online HO context. The initial research model is divided into three transaction stages such as pre-HO transaction, HO transaction and post-HO transaction stage. In addition, at each transaction stage human and non-human actors may influence patients' satisfaction and as a result, make patients more attractive, trust and loyal to the online HO. In terms of human actors, at each transaction stage, friends and family members impact on patients' satisfaction. In terms of non-human actors, dimensions of e-service quality influence patients' satisfaction. For example, at pre-HO transaction stage (1) information, (2) usability and (3) efficiency, at HO transaction stage (1) security, (2) system availability, (3) fulfilment, (4) privacy and (5) reliability and at post-HO transaction stage (1) responsiveness, (2) empathy, (3) compensation and (4) contact impact on patients satisfaction and make patients more attract, trust and loyal to the online HO accordingly.*

Keywords— **Online Transaction, Online healthcare, ANT, Attraction, Trust and Loyalty**

I. INTRODUCTION

Today, most Healthcare Organizations (HO) including hospitals are transferring some of their services on the Internet to achieve their challenging goals in greater solutions [1]. For example, Healthcare Web Portals (HWP) as a new way of interaction between HO and patients are significantly important when there is not such an enough time for patients to physically go to the hospitals and get traditional services from them. In fact, due to the advent of technology, HWP are designed to facilitate information and services between HO and patients [2]. In line of this, patients have the opportunity to search among any HWP which offer different prices and different medical and technical qualities [3]. According to [2], today HO can be viewed as a business where the HO provides health services to the customers or in other words patients. Therefore, in this research the term "customers" and "patients" are applied interchangeably.

This paper is organized as follow: section I gives the introduction about HWP. Section II is helpful to understand background of researches on dimensions of e-service quality in online portals. Section III explains the research conceptual model for online HO and last section IV concludes and discusses the paper and followed by the references.

II. LITERATURE REVIEW

A. Patient Satisfaction

According to disconfirmation theory by [4], customer satisfaction is determined by inconsistency between cognitive standard and perceived performance such as desires and expectation. In fact, consumer subjective judgment resulting from comparing their expectations and their perceptions of performance received is satisfaction ([5],[6]).

Therefore, in terms of the online HO, patient satisfaction is resulting from a judgment or discrepancy between services'

perceived performance in relation to patients' expectations in HWP.

B. Service Quality/ E-Service Quality

[7] claims that service quality can be assessed by measuring the "gaps" or discrepancies between what the consumers perceive from services or products and what the customers expect initially.

In fact, according to ([7],[8]), the differences between the customer's expectations of the service provider's performance and their evaluation of the services they received determine by service quality.

1) Attraction, Trust and Loyalty

TABLE I

PRIOR RESEARCHES ON DIMENSIONS OF E-SERVICE QUALITY-ATTRACTION

	Author(s)	Methodology	Context	Dimensions of E-SQ
1	[9] Li and Suomi (2007)	Literature review	Online retailing	Efficiency, Information quality
2	[10] Chen (2012)	questionnaires	Web portal	Aesthetics, Navigational usability, Organizational culture
3	[11] Chiou, Lin, Perng (2010)	Literature review	A web portal	Information, Promotion
4	[12] Horng and Tsai (2010)	Content Analysis	A web portal	Navigability; Usability; Richness; Information, Attractiveness,
5	[13] Hadwich (2010)	in-depthinterviews	HWP	Accessibility/Usability, User friendliness, Individualization
6	[14] Büyüközkan (2011)	fuzzy analytic	HWP	Tangible, Information quality

Table I illustrates the prior researches on dimensions of e-service quality based on attraction. For example, a study by [13]

in HWP indicates that dimensions of e-service quality such as accessibility/usability, user friendliness and individualization influencing patients' attraction.

TABLE II

PRIOR RESEARCHES ON DIMENSIONS OF E-SERVICE QUALITY-TRUST

	Author(s)	Methodology	Context	Dimensions of E-SQ
1	[9] Li and Suomi (2007)	Literature review	Online retailing	Efficiency, Information quality
2	[13] Hadwich (2010)	in-depthinterviews	HWP	Accessibility / Usability, User friendliness, Individualization
3	[15] Ladhari (2010)	Literature Review	Online re tailing.	Reliability, Security Fulfilment, Privacy
4	[16] Ahn, (2007)	Survey	Online re tailing	Security, Privacy

Table II illustrates the prior researches on dimensions of e-service quality based on trust. For instance, according to [13] dimensions of e-service quality such as security of data, reliability, ethical conduct and fulfillment impact on patients' trust in HWP.

Customer loyalty has been defined as "the degree to which a customer exhibits repeat purchasing behaviour from a service provider, possesses a positive attitudinal disposition toward the provider, and considers using only this provider when a need for this service arises [17]."

The less motivation of search for alternatives and to have a higher resistance to competitors' blandishments [18] made the loyal customers attractive. The satisfied customers are return back and have emotional relationships with the Web site.

Therefore, finding answers to the question of what the roles of service quality and customer satisfaction are in creating loyalty to service providers and how customers evaluate content-based services are become important.

TABLE III

PRIOR RESEARCHES ON DIMENSIONS OF E-SERVICE QUALITY-LOYALTY

	Author(s)	Methodology	Context	Dimensions of E-SQ
1	[9] Li and Suomi(2007)	Literature review	Online retailing	Responsiveness, Compensation, Contact
2	[19] Grigoroudis, et al., (2008)	Survey	Online retailing	Customer service, Technical performance, Interactivity
3	[2] Patsioura et al., (2009)	Survey	HWP	Interactivity, Customer care
4	[13] Hadwich(2010)	In-depth interviews	HWP	Empathy, Ability to respond
5	[14] Büyüközkan (2011)	Fuzzy analytic	HWP	Responsiveness, Empathy

Table III shows the prior researches on dimensions of e-service quality based on loyalty. For instance, according to [13], dimensions of e-service quality such as "empathy" and "ability to respond "impact on patients' loyalty in HWP.

C. Actor Network Theory (ANT)

Actor-network theory is a sociological theory, and sometimes abbreviated to ANT ([20],[21],[22]) It should be noted that an actor-network is not just people; it can be organizations and objects. People, organizations and objects are together considered as actors. The concept of the heterogeneous network is the primary concept of actor-network theory. That is to say, a network contain many wide variety of elements, therefore, ANT include of both technical and social parts that are inseparable parts by ANT. Consider to denying the purely social and technical relationship and the world to full of hybrid entities such as human and non-human elements the ANT deals with the social-technical divide [20].

Through the development of a new technology consists of all technical and the non-technical elements, based on this theory, an actor network influence on decision-making and action in the development process. The theory can be contributes in all elements of such networks with the same descriptive status. The actors can be texts, groups, individuals, graphical and technical

artefacts. In the network, each actor influences other actors; therefore, they create a position for their goals with their own interests.

As a result, in the online HO context, an actor network includes clinical practitioners, patients, policy makers [23], friends and families [24], as the human actors and the dimensions of e-service quality such as information and security as the non-human actors. In fact, as the dimensions of e-service quality (non-human actors) such as information and usability may impact on patients' attraction to visit the HWP, suggestions of friends and family members also influencing patients' attraction. Therefore, in HWP equal attention should be paid in the human and non-human actors at the same time.

III. RESEARCH CONCEPTUAL MODEL

The initial research model adapted from [9] in the online shopping context and will extend to the online HO context.
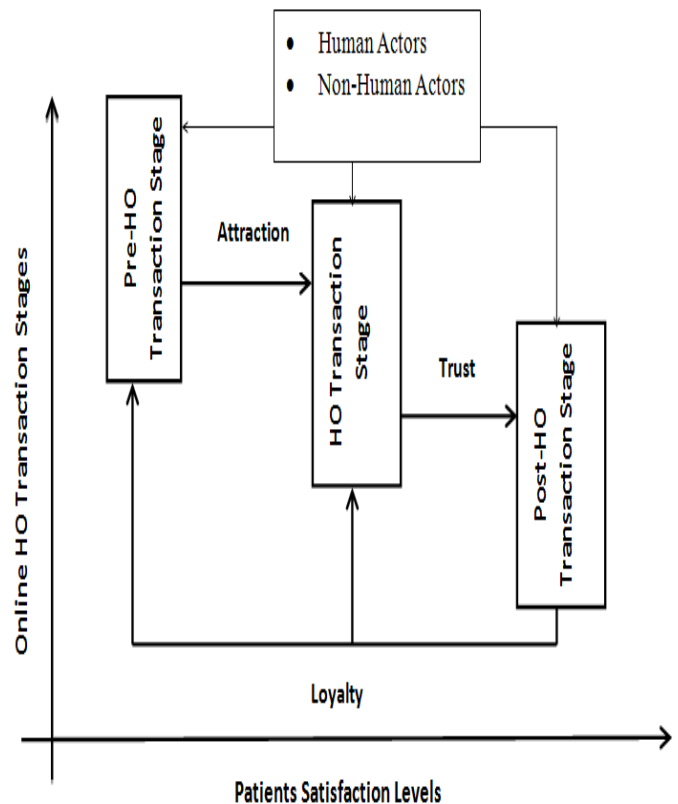

Fig. 1 An initial research model for HWP

Figure 1 illustrates the initial research model for online HO. As shown in figure 1, the initial research model consists of three online HO transaction stages such as (1) pre-HO transaction stage, (2) HO transaction stage and (3) Post-HO transaction stage. Moreover, at each transaction stage human and non-human actors may influence patients' satisfaction and as a result, make them more attracted, trust and loyal to the online HO. In terms of human actors, friends and family members may impact on patients' attraction, trust and loyalty. However, in terms of non-human actors, dimensions of e-service quality at each transaction stage influencing patients' attraction, trust and loyalty.

In order to find out dimensions that have a more influence at each transaction stage, the researcher tries to focus on prior studies on e-service quality and attraction, e-service quality and trust and e-service quality and loyalty in order to have a superior understanding of how various dimensions of e-service quality at each transaction stage lead to patient satisfaction.

TABLE IV

DIMENSIONS OF E-SERVICE QUALITY AT PRE-HO TRANSACTION STAGE

	Author(s)	Dimensions of E-SQ	Definition
1	([9],[11],[12],[25],[26],[13],[15],[19],[27],[14]) Li and Suomi (2007), Chiou, Lin, Perng (2010), Horng and Tsai, (2010), Flavian, Gurrea, Orus (2009), Schmidt (2008), Hadwich (2010), Ladhari (2010), Grigoroudis, E(2008), Li And Suomi (2009), Büyüközkan (2011)	Information	As a comprehensive data which users can get through the online portal.
2	([19],[15],[13],[12]) Grigoroudis, E(2008), Ladhari (2010), Hadwich (2010), Horng and Tsai (2010)	Usability	The extent to which the web site is visually appealing, consistent, fun and ease of use.
3	[9] Li and Suomi (2007)	Efficiency	The ease and speed of accessing and using the site.

Table IV illustrates the dimensions of e-service quality at pre-HO transaction stage. Based on the literature, it can be concluded that the most significant factors which impact on patients 'attraction are information, usability and efficiency. As shown in table IV, for example, usability is defined as the extent to which the web site is visually appealing, consistent, fun and ease of use ([19],[15],[13],[12]).

TABLE V

DIMENSIONS OF E-SERVICE QUALITY AT HO TRANSACTION STAGE

	Author(s)	Dimensions of E-SQ	Definition
1	([9],[13],[27],[16],[14]) Li And Suomi (2007), Hadwich (2010), Li And Suomi (2009), Ladhari(2010), Ahn, T (2007), Büyüközkan (2011)	Security	Security refers to the freedom form danger, risks or doubts during the service process.
2	[9] Li And Suomi (2007)	System avail ability	the extent to which the web site is visually appealing, consistent, fun and ease of use
3	([9],[13],[15]) Li And Suomi (2007), Hadwich(2010), Ladhari (2010)	Fulfilment	The ease and speed of accessing and using the site.
4	([9],[16],[15]) Li And Suomi (2007),Ahn, T(2007), Ladhari (2010),	Privacy	The degree to which the site is safe and protects customer information.
5	([14],[15],[27],[13]) Büyüközkan (2011), Ladhari (2010), Li And Suomi (2009), Hadwich (2010)	Reliability	To make sure the website's promises.

Table V illustrates the dimensions of e-service quality at HO transaction stage. Based on the literature, it can be concluded that the most significant factors which impact on patients 'trust are security, system availability, fulfilment, privacy and

reliability. For instance, security is referred to the degree to which the site is safe and protects user Information ([9],[13],[27],[15],[16],[14]).

TABLE VI

DIMENSIONS OF E-SERVICE QUALITY AT POST-HO TRANSACTION STAGE

	Author(s)	Dimensions of E-SQ	Definition
1	([15],[14],[27],[9]) Ladhari (2010), Büyüközkan (2011), Li And Suomi (2009), Li And Suomi (2007)	Responsiveness	Effective handling of problems and returns through the site.
2	([14],[13],[27]) Büyüközkan (2011), Hadwich (2010), Li And Suomi (2009)	Empathy	entering into the feelings of another
3	[9] Li And Suomi (2007)	Compensation	The degree to which the site compensates customers for problems.
4	[9] Li And Suomi (2007)	Contact	The availability of assistance through telephone or online representatives.

Table VI shows the dimensions of e-service quality at post-HO transaction stage. Based on the literature, it can be concluded that the most significant factors which impact on patients 'loyalty are responsiveness, empathy, compensation and contact. For example, responsiveness defines as an effective handling of problems and returns through the site.

IV. DISCUSSION AND CONCLUSION

In this paper factors which influencing patient's attraction, trust and loyalty are divided into human and non-human actors. In terms of non-human actors, the author reviewed several dimensions of e-service quality based on attraction, trust and loyalty. These dimensions of e-service quality cover domains from the online retailing context to HWP. In terms of human actors, based on ANT, friends and family members may also influencing patients' attraction, trust and loyalty. The initial research model adapted from [9] in the online shopping context and extended to the online HO context. According to the research conceptual model, the online transaction stage in the

HO context are divided into three transaction stages such as pre-HO transaction stage, HO transaction stage and post-HO transaction stage. Friends and family members as well as providing different dimensions of e-service quality at each HO transaction stage leads patients to achieve basic satisfaction level and as a result, they become more attracted, trust the HWP and become loyal to the HO.

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Biography

Saman Foroutani received the Bachelor`s Degree in Computer software (applied scientific) of Islamic Azad University of Iran-Shiraz branch in 2008. Then, he did his Master in the field of Information Technology Management at University Technology Malaysia, in 2011. Currently, he is a PhD student in the field of Information System at University Technology Malaysia. Now, He is doing his PhD research on online healthcare organization in Malaysia.

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