Assessing the Impact of SaaS Quality on Telecom Customer Loyalty: A Social Capital Theory Approach

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ABSTRACT

Purpose: The main purpose of this research is to empirically draw on social capital theory to examine SaaS post-adoptions in relation to the clients’ intentions to explore new SaaS service features in order to be loyal clients to the Egyptian telecom operators. Design/methodology/approach: The methodology is based on quantitative approach using a questionnaire tool to gather required data in which a selection of customers from the four Egyptian telecommunication companies have been invited to participate. Structural equation modeling analyses (SEM) using AMOS software version 25 used to analyze data gathered. Findings: The findings of this study included the direct effect between SaaS service quality and customer loyalty is statistically significant, the direct effect between SaaS service quality and social capital is statistically significant, the direct effect between social capital and customer loyalty is statistically significant, and there is partial mediation effect of the social capital in the relationship between SaaS service quality and customer loyalty. Research limitations: The research is undertaken on a single industry and therefore is not necessarily representative of other industries. This research relied on self-reported data from participants in a cross-sectional sample. Empirical implications: Telecom operators should think about strategic initiatives to strengthen the related service quality aspects in order to sustain or even increase their customer loyalty.

Keywords: Customer Loyalty, Social Capital, Software-as-a-Service (SaaS).

I. INTRODUCTION

Organizations all over the world have been continuously developing and deploying IT-based solutions to improve communication and decision support between various stakeholders. This has been made possible by the advancement of information technologies (IT), such as the internet and wireless communication technologies. Scholars have recently seen fervent cloud computing advertisements made by IT vendors and rising interest in this topic in business media. IT functionalities can be delivered over the internet by means of cloud computing technology. It has been seen as a new paradigm for allocating and overseeing IT resources for businesses of all sizes, offering advantages including increased adaptability, cost savings, and accessibility (Hayes, 2008; Armbrust et al., 2010).

In recent years, interest in cloud computing has grown significantly in both the corporate and academic worlds. This is regarded as a distributed network-based technology for services and applications that makes use of virtual resources and is available via networking and Internet standards (Rezaei et al., 2014). Disseminated, grid, and utility computing gave way to settled cloud computing (Shiau & Chau, 2016). There are three main types of cloud computing services: Infrastructure as a Service (IaaS), which is based on outsourcing the processing and data storage hardware; Platform as a Service (PaaS), which offers developers a cloud platform to create applications and services; and Software as a Service (SaaS), which enables users to access their applications through a browser rather than installing software on their own.

Software-as-a-service (SaaS) refers to on-demand software delivery service models that give businesses access to resources, services, and a comprehensive portfolio of applications over the Internet (Benlian et al., 2012). Additional factors include the potential opportunities and rising need for highly accurate and expansive SaaS for service innovation (Barrett et al., 2015). But SaaS architecture reflects a paradox: SaaS users benefit from low installation and switching costs, reduced uncertainty in custom IT initiatives, and flexibility in service provider selection to meet their needs. However, they also experience drawbacks due to limited customization and client-specific investment, such as challenges with SaaS use after adoption (such as persistence, loyalty, and SaaS exploration), uncertainty (such as changeability), and difficulties with post-adoptions of usage of SaaS.

II. RESEARCH PROBLEM

For software-as-a-service applications, customers do not pay to own the software but as an alternative only pay to the access and usage. Sequentially, the SaaS provider hosts and operates the application (Cisco, 2009). This business model...
presents various advantages to its customers, such as reduced costs, IT dependence, and more flexibility as an organization is able to scale the SaaS solution swiftly as business conditions change (Waters, 2005). The SaaS business model is likewise an advantage to its vendors. Compared to traditional software vendors, SaaS solution providers typically operate in close connection with their customers which leads to superior knowledge about clients and their needs. As clients pay on a regular basis in exchange for sustained access to the application, SaaS companies possess an expectable recurring revenue stream (Cloud Strategies, 2013). However, SaaS vendors also critically rely on the renewals of subscriptions making them highly sensitive to the customers’ constant software usage.

Consequently, great parts of the SaaS vendor activities can be compared to traditional customer relationship management (CRM). If the particular software solution reveals low or declining usage within a corporate, a renewal of the contract after the initial period of agreement will become doubtful. Hence, adequately managing usage continuance intention to explore new features, which is demonstrated as the decision a user makes to use software-as-a-service application beyond the initial adoption (Ratten, 2016), is key to the success of a SaaS business. Monitoring and likewise forecasting usage constitutes the foundation for strategic decision makers in SaaS companies to take informed business decisions. Research on SaaS in advanced phases of the software lifecycle, for example the usage continuance, is sparse (Walther et al., 2015). The existing literature stream on continued SaaS use principally explores the influence of service quality, trust, and satisfaction on continuance use intention to explore novel SaaS features (Benlian et al., 2010; 2011; Yang & Chou 2015).

Recently, scholars have witnessed strong promotions of cloud computing presented by IT vendors and increasing attention on this topic in business media. Cloud computing technologies can deliver IT functionalities, by means of services, over the internet. It has been considered as a new archetype in organizing and managing IT resources for companies of different sizes, providing benefits like improved flexibility, cost saving, and accessibility (Hayes, 2008; Armbrust et al., 2010).

Although the variety of researches conducted in the context of SaaS quality and its impact on an organization, and although many telecom operators are undertaking SaaS projects especially to provide financial services, there is no clear scientific confirmation on how introducing other technology product particularly SaaS, that doesn’t belong to the organization business industry and belongs to other vertical market, can affect the organization performance either positively, negatively or even if has no effect on that organization.

Furthermore, only limited studies address additional influencing factors by applying a socio-technical approach (Walther et al., 2015). Thus, this research is conducted to introduce new technology of a non-core business for telecom companies on customer loyalty, to investigate the effect of SaaS quality on customer loyalty in the Egyptian market drawing into a social capital theory approach.

Research problem can be summarized in the following questions:

i. What is the impact of SaaS quality on customer loyalty in the Egyptian telecom market?
ii. What is the impact of SaaS quality on social capital in the Egyptian telecom market?
iii. What is the impact of social capital on customer loyalty in the Egyptian telecom market?
iv. What is the impact of social capital on SaaS Quality with customer loyalty as a mediating variable in the Egyptian telecom market?

III. RESEARCH OBJECTIVE

The main purpose of this research is to empirically draw on social capital theory to examine SaaS post-adoption in relation to the client’s intentions to explore new SaaS service features in order to be loyal clients to the Egyptian telecom operators.

IV. LITERATURE REVIEW

A. Cloud Computing and Software-as-a-Service

Cloud computing has emerged as a result of the development of parallel, distributed, and grid computing as well as the confluence of technologies including the Internet, distributed systems, virtualization, and multicore CPUs (Buyya et al., 2008). Users get on-demand access to Internet-based apps and information technology infrastructure (Haji et al., 2020). Cloud computing is classified as Infrastructure as a Service (IaaS), Platform as a Service (PaaS), or Software as a Service (SaaS) depending on how it is used by end users (Senyo et al., 2016).

Organizations who implement cloud computing can benefit from it in a variety of ways due to its technical advantages; they can offer pay-as-you-go, cut costs, outsource IT operations, etc. (Azarnik et al., 2012; Dutta et al., 2013; Salleh et al., 2012). Additionally, the scalability (Aleem et al., 2013) and agility (Armbrust et al., 2010) of cloud computing enable users to quickly expand their IT infrastructure in order to respond to customer requirements and enhance the agility and efficiency of their business operations (Nkhoma et al., 2013). Lastly, cloud computing encourages collaboration and allows staff members the option to work in a more flexible environment (Abdel-Basset et al., 2018).

“Software as a Service” (SaaS), the top layer of the three main categories of cloud computing, is regarded as the consumer accessing applications on the cloud infrastructure of the service provider (Mell et al., 2011). Additionally, SaaS apps distribute software and data to several users simultaneously on a single instance of the software by utilizing a technique known as multi-tenancy technology (Bhardwaj et al., 2010).

More significantly, SaaS services piqued the curiosity of academics, industry professionals, and IT firms and developed into a working software entity with a primary online focus (Tomás et al., 2018).

According to Lee et al. (2009), there are six key features that define SaaS: (1) Reusability, which enables users to download the application through the internet and use it for a range of tasks, (2) Provider-maintained information that
enables SaaS users to purchase a licence for on-demand use of the product (3) A service's ability to be adjusted to match the needs of a specific client is referred to as its customizability. (4) SaaS users can access it online because they just rent the programme rather than purchasing it. (5) The ability to readily scale up or manage an increasing amount of work is a highly desirable attribute of a system, network, or process. Six) Pay-per-use.

A significant portion of the research on software as a service usage persistence aims to clarify the significance of service quality, trust, and satisfaction for sustained SaaS adoption (Benlian et al., 2010; 2011; Yang et al., 2015). A SaaS metric was created by Benlian et al. (2011) to record service quality assessments in SaaS systems. They found two new elements, namely security and flexibility, while validating previously recognised service quality dimensions (i.e., rapport, responsiveness, reliability, and features). The researcher decided to adopt Benlian et al. (2011) dimensions to measure SaaS service quality.

B. Social Capital Theory

“The sum of real and potential resources contained in and taken from the network of relationships held by a person or social unit” is how social capital is defined by Nahapiet et al. (1998, p. 243). Social capital is ingrained in the interpersonal connections and links that people have with one another and with their communities, as opposed to other forms of capital (such as human capital and physical capital), which are based on people or things (Putnam, 2000; Wasko & Faraj, 2005). The idea that social connections can be useful resources is fundamental to social cognitive theory (SCT) (Coleman, 1988; Chiu et al., 2006). Evidence suggests that social capital may be produced in the online domain, since computer-mediated interactions can substitute or enhance face-to-face interactions (Ellison et al., 2007).

It is possible to look at social capital at the individual level because interactions between a buyer and a seller take place at the individual level. However, a single buyer can interact with several sellers when social capital is nurtured and gathered at the community level (Coleman, 1988). In this study, we focus on cumulative interactions at the community level, where social capital is produced throughout the entire community, to examine the impact of social capital (Wang et al., 2009). The researcher thinks that consumers' perceptions of social capital at the local level can influence how satisfied they feel about their purchases. Social capital has three primary components: relational, structural, and cognitive (Nahapiet et al., 1998).

The tools that allow people to share interpretations and representations are known as cognitive capital (Robert et al., 2008; Sun et al., 2012; Wasko et al., 2005). Structural capital refers to the total network of links between people (Wasko et al., 2005; Nahapiet et al., 1998) and indicates social interaction relationships between people and units (Hsu & Chang, 2014; Nahapiet et al., 1998). Relational capital is defined as resources founded on social relationships cultivated via a history of interactions between people (Sun et al., 2012; Nahapiet et al., 1998).

A service firm may have numerous relationships in the context of services marketing (for example, with suppliers, customers, rival companies, and workers) at various levels (e.g. firm-to-firm, individual-to-firm, and individual-to-individual) (Niculescu et al., 2013). However, we only concentrate on the social capital that results from the relationship that develops between an individual service provider (i.e., the person who represents the firm) and an individual service consumer. As mentioned earlier, social capital is the combination of the value embedded in all of these relationships. Even while it only represents a small percentage of the potential value hidden within a company's social network, this can be used as a jumping off point when applying social capital theory to marketing interactions.

Numerous studies have hypothesized that social capital acquired in one setting may be transferred to another (Coleman, 1990; Nohria, 1992). As a result, connections made for one reason (like a friendship) may also be exploited for another (e.g. a service provider). This has been referred to as multiplex ties by some (McPherson et al., 2001). Multiplex relationships in a service context would be reflected by the existence (or lack) of a wide variety of social ties between the service provider and customer. For the sake of economic exchange, there is at the most fundamental level a tie (or relationship) between the service provider and the customer. Other connections between these two partners could include extra-romantic relationships or shared participation in other organizations (for example, both spouses might belong to the same golf club) (i.e. the service provider and consumer are also friends).

Each tie would have unique structural characteristics, such as its length (i.e., the length of the relationship) and the degree of interaction it generates (e.g. multiple ties or roles result in more interactions). The number of connections and the duration of a relationship are proposed operationalization of the social capital's structural dimension (e.g. Burt, 2000; Nahapiet et al., 1998). As a result, relationships with many encounters over a long period of time have significant structural social capital. In this context, we would deduce that many ties between service provider and customer would strengthen the relationship.

C. Saas Quality and Customer Loyalty

Prior to now, Zeithaml (1988) equated “quality of object” with “customer value”, which refers to the customer's total assessment of the utility of a good or service based on their perception of what they receive and what they actually receive. Customer value depends on individual traits like past product knowledge and financial resources as well as environmental factors like time and place of consumption (Nyadzayo et al., 2016). In fact, Ramaseshan et al. (2013) claimed that next to the interpersonal connection, service quality is one of the most crucial antecedents. Additionally, responsiveness and security are crucial for a service that is favorably evaluated, according to Benlian et al. (2011). According to Nyadzayo et al. (2016), client trust is also boosted by service providers' assurances of their products' dependability and quality. In its significant report titled “A blueprint for telecom's critical reinvention”, Mckinsey and Company (2021) discussed the process of reimagining and reverse engineering the telco future and mentioned that: operators must first define a detailed vision of what the reimagined telco will look like. Following that, leaders must adopt a future-back strategy that fundamentally alter the
organizational DNA.

Chee et al. (2020) investigated how service quality, customer satisfaction, and loyalty affected customer retention in the Malaysian telecommunications sector. Customer loyalty has been demonstrated to have a strong correlation with customer satisfaction. Customer satisfaction has been found to be strongly correlated with service quality, which was assessed using the network, customer service, and price structure.

This current research focuses on SaaS quality offered by Telecommunications companies in Egypt and its impact on customer loyalty. Based on the above literature, the first hypothesis is developed as:

**H1: SaaS Quality has an impact on Customer Loyalty.**

**D. SaaS Quality and Social Capital**

Social capital theory states that structural capital is based on the value of resource assets (Nahapiet et al., 1998), but because SaaS services are multi-tenant on-demand offerings delivered over the Internet, service quality is more appropriate for gauging customers' intentions to experiment with new SaaS features than structural social capital (Chou et al., 2013). The level of interaction reflects how customers interact with the SaaS service being used. Additionally, the client-SaaS service feature relationship is reflected in the quality of the interactions, which in turn has an effect on social capital (Sun et al., 2012). Relational capital affects how customers interact with SaaS service features. The interaction quality between a client firm and other SaaS users might influence the client's decision-making process and increase the client's motivation to create new system feature interactions (Chang & Wong, 2010; Chou et al., 2013; Chou et al., 2016). Additionally, cognitive capital increases as customers interact with the system with increased confidence because they become more skilled at using the unique system features as their understanding of the service increases.

Because they increase the clients' rapport with the system and the system's flexibility (Benliant et al., 2011), it is anticipated that these investments would soothe customers' concerns about the interaction quality of SaaS. They also assist the clients' ability to explore new system features. As a precursor to the new system features of SaaS services addressing social capital, the researcher in this study only focused on the outcome quality of a single SaaS service provider (Sun et al., 2012). By encouraging the role of social capital in the post-adoption stage, outcome quality promotes relational and cognitive capital and reflects the effectiveness of novel features in the workplace (Chou et al., 2016). It also includes characteristics like responsiveness and dependability of SaaS systems (Benliant et al., 2011), which help clients find ways to tailor the SaaS service features to better match system outcomes and leverage social capital to boost their exploratory intent. The second hypothesis is formed as follows in light of the material mentioned above:

**H2: SaaS Quality has an impact on Social Capital.**

**E. Social Capital and Loyalty**

The claim that relational social capital will boost client loyalty is already supported by data from service research. Increased social capital results in greater loyalty to the service provider as network members become closer and show a sense of commitment to one another. For instance, numerous studies have discovered that personal ties, such as friendships, frequently affect service users' intentions to repurchase (De Wulf et al., 2001). In addition, a number of studies have looked into how loyalty to the provider of the service affects consumers' intentions to make more purchases (Bove et al., 2001b).

Relational capital is a term used to describe the interpersonal connections that people have made (Nahapiet et al., 1998). When there is mutual trust, reciprocity, and respect standards, there is relationship capital. Investigated are these aspects of relational capital that might be pertinent to customer happiness (Sun et al., 2012).

Literature support for the influence of cognitive social capital on outcomes related to loyalty. For instance, Schouten and McAlexander (1995) discovered evidence of loyalty that was successful in part because of customers' social connections with other customers. Since social contacts are how cognitive social capital is generated, it follows that if the service provider also belongs to the same groups, this cognitive social capital should increase client loyalty. According to Goodwin (1996), customers may feel pressured to pay higher prices when a service supplier belongs to the same associations as them. From this explanation, it may be inferred that cognitive social capital can increase consumer loyalty. Mutual trust demonstrates the belief that other people won't act selfishly (Gefen et al., 2003). Unfair pricing and the spread of false information are two instances of opportunistic behavior (Gefen et al., 2003). Additionally, trust can boost output and profitability (Kim et al., 2009), boosting customers' financial happiness. When buyers and sellers have mutual trust, purchasers do not need to exert the effort to become familiar with the sellers and items before engaging in online transactions, which may result in financial pleasure. Additionally, the principles of reciprocity include a mutual debt that allows people to pay back the benefits they receive from others, ensuring that exchanges will continue (Hsu et al., 2014; Wasko et al., 2005). Similarly, the degree to which purchasers believe that their relationships with sellers may be enhanced through exchange is known as a reciprocal buyer-seller relationship (Chai et al., 2011). Purchasers may sense the vendors' generosity while dealing with sellers with whom they have close reciprocal relationships. So it makes sense to expect that reciprocity will make buyers feel good about themselves. A harmonious relationship may also be attained if there is a high degree of respect between online buyers and sellers since buyers will understand that sellers appreciate their concerns and make an effort to fix any issues (Ou et al., 2014). When sellers are more "concerned and considerate," buyers will be satisfied with the social aspects of the transactional relationship (Geyskens et al., 1999). The third and fourth hypotheses are constructed as follows in light of the literature mentioned above:

**H3: Social Capital has an impact on Customer Loyalty.**

**H4: Social Capital mediates the relationship between Service Quality and Loyalty.**
V. Method

Depending on the factors and topics of the research, a composite questionnaire is used as the data collection tool. The research of Benlian et al. (2011) was used to develop the dimensional scale to measure SaaS quality. The 28 items on the scale SaaS-Qual instrument, which addressed the six SaaS-Qual factors (rapport, responsibility, reliability, flexibility, features, and security). Social capital was measured in line with Chiu et al., (2006), 16 items addressed cognitive and relational capital. While the customer loyalty measure was taken from Alam et al. (2012) scale was evaluated in a telecommunications context.

A. Research Population and Sample

Individual customers who subscribe to internet services from Egyptian telecommunications firms, whether through an ADSL subscription or a mobile internet subscription, serve as the unit of analysis in this study. Consequently, the study’s population in accordance with the ICT Indicators Bulletin for March 2022 is 74.92 million subscribers, 526 questionnaires responses were collected.

B. Measures

The data collected from participants was transferred from Excel to analysis of moment structures (AMOS) software for analysis. Data cleaning was carried out and surveys that contains missing data or data errors were deleted from the raw data file.

To test the measurement model, a CFA is conducted by using AMOS 25.0. Fig. 1 shows the measurement model which consists of 9 latent variables, namely, Rapport, Responsiveness, Reliability, Flexibility, Features, Security, Relational Dimension, Cognitive Dimension, and Customer Loyalty.

According to Hair et al. (2019), the measurement’ model enables the researcher to use several’ variables (indicators) for a single independent or dependent’ variable. In a Confirmatory’ Factor Analysis (CFA), the researcher’ can assess the contribution’ of each scale item as well as incorporate how well the scale’ measures the concept (reliability). The scales are then integrated into the estimation’ of the relationships between dependent and independent’ variables in the structural model. This procedure is similar to performing a factor analysis of the scale items and using the factor scores in the regression.

Measurement items have standardized loading estimates of 0.5 or higher (ranging from 0.517 to 0.911 at the alpha level of 0.05, indicating the convergent validity of the measurement model. Discriminant validity shows the degree to which a construct is actually different from other constructs (Hair et al., 2019).

Composite reliability (CR) is used to measure the reliability of a construct in the measurement model. CR is a more presenting way of overall reliability, and it determines the consistency of the construct itself (Hair et al., 2019). CR of Rapport = 0.878, Responsiveness =0.875, Reliability =0.828, Flexibility = 0.918, Features = 0.921, Security =0.882, Relational Dimension = 0.920, Cognitive Dimension =0.764 and Customer Loyalty =0.941). So, it clearly identified that in measurement model all construct have good reliability.

The average variances extracted (AVE) should always above 0.50 (Hair et al., 2019). The results show that average variances extracted (AVE) of the particular constructs (Rapport = 0.591, Responsiveness =0.583, Reliability =0.562, Flexibility = 0.737, Features = 0.702, Security =0.604, Relational Dimension = 0.698, Cognitive Dimension =0.523and Customer Loyalty =0.727) are more than 0.500. Overall, these measurement results are satisfactory and suggest that it is appropriate to proceed with the evaluation of the structural model.

Fig. 1. Measurement Model.
VI. RESULTS

Structural equation modelling (SEM) is the statistical measure used in this study to test hypotheses. Structural equation modelling (SEM) is a family of statistical models that seek to explain the relationships among multiple variables. In doing so, it examines the structure of interrelationships expressed in a series of equations, similar to a series of multiple regression equations. These equations depict all of the relationships among constructs (the dependent and independent variables) involved in the analysis. Fig. 2 provides the structural model (final Result), while Table 1 shows the model fit summary.

**TABLE I: MODEL FIT SUMMARY**

<table>
<thead>
<tr>
<th>Goodness of Fit Measure</th>
<th>Index Name</th>
<th>Model Result</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-square</td>
<td>Chi2</td>
<td>2033.543</td>
<td>accepted</td>
</tr>
<tr>
<td>Degrees of Freedom</td>
<td>DF</td>
<td>848</td>
<td>accepted</td>
</tr>
<tr>
<td>Chi-square / Degrees of Freedom</td>
<td>Chi2 / DF</td>
<td>2.398</td>
<td>accepted</td>
</tr>
<tr>
<td>Comparative Fit’ Index</td>
<td>CFI</td>
<td>0.923</td>
<td>accepted</td>
</tr>
<tr>
<td>Tucker Lewis Index</td>
<td>TLI</td>
<td>0.918</td>
<td>accepted</td>
</tr>
<tr>
<td>Root Mean’ Square Error of Approximation</td>
<td>RMSEA</td>
<td>0.054</td>
<td>accepted</td>
</tr>
</tbody>
</table>

The results of structural model using the AMOS software, shows that DF was 848 (it should be more than 0), Chi2 / DF has a value of 2.398, that is less than 2.0 (it should be less than or equal 2.0). The RMSEA was 0.054 (it should be less than 0.08). The TLI index .918 which is very close to 1.0 (a value of 1.0 indicates perfect fit). The CFI was 0.923. All indices are close to a value of 1.0 in CFA, indicating that the measurement models provide good support for the factor structure determined through the CFA.

A. Direct Effects

Table II below presents the results of the individual tests of significance of the relationship between the variables. It reveals that, as expected an impact between SaaS Service Quality and Customer Loyalty ($\beta = 0.566$, CR (Critical Ratio) = 5.921, CR > 1.96, p = 0.000, p < 0.05). SaaS Service Quality has an impact on Social Capital is supported as the result shows that ($\beta = .757$, CR (Critical Ratio) = 13.647, CR > 1.96, p = 0.000, p <0.05), as it predicts that SaaS Service Quality has an impact on Social Capital. Social Capital has an impact on Customer Loyalty is supported ($\beta = .337$, CR (Critical Ratio) = 2.963, CR > 1.96, p = 0.003, p < 0.05), as it predicts that Social Capital has an impact on Customer Loyalty.

**TABLE II: HYPOTHESIZED PATH OF THE FINAL STRUCTURAL EQUATION MODEL**

<table>
<thead>
<tr>
<th>Hypothesized path</th>
<th>Beta (β) Value</th>
<th>Critical Ratio (C.R)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Capital $\rightarrow$ SaaS Service Quality</td>
<td>0.757</td>
<td>13.647</td>
<td>0.000</td>
</tr>
<tr>
<td>Customer Loyalty $\leftarrow$ SaaS Service Quality</td>
<td>0.566</td>
<td>5.921</td>
<td>0.000</td>
</tr>
<tr>
<td>Customer Loyalty $\leftarrow$ Social Capital</td>
<td>0.337</td>
<td>2.963</td>
<td>0.003</td>
</tr>
</tbody>
</table>

B. Indirect effects

Table III and Table IV reveals a statistically significant indirect effect SaaS Service Quality and Customer Loyalty through Social capital ($P = 0.002, P < 0.05$). The results of the mediation effect indicate that there is partial mediation effect of the Social Capital between the relationship of SaaS Service Quality and Customer Loyalty.

**TABLE III: STANDARDIZED INDIRECT EFFECTS**

<table>
<thead>
<tr>
<th>Variables</th>
<th>SaaS Service Quality</th>
<th>Social Capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Capital</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Customer Loyalty</td>
<td>0.255</td>
<td>0.000</td>
</tr>
</tbody>
</table>

**TABLE IV: MEDIATING SIGNIFICANCE**

<table>
<thead>
<tr>
<th>Mediating Pass</th>
<th>Significant (P value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect SaaS Service Quality on Customer Loyalty through Social capital</td>
<td>0.002</td>
</tr>
</tbody>
</table>
The significance of the path coefficients has been analyzed using one-tailed significance (p < 0.05). It shows that all the hypothesized paths were supported by the result and significant at 5% significance level.

VII. DISCUSSION

The aim of this current research is to empirically draw on social capital theory to examine SaaS post-adoptions in relation to the clients’ intentions to explore new SaaS service features in order to be loyal clients to the Egyptian telecom operators. This research findings confirm the positive impact of Saas quality on customer loyalty in Egyptian telecommunication companies. This result is consistent with Yang et al. (2015), Benlian et al. (2011), Ramaseshan et al. (2013), Nyadzayo et al. (2016), and Chee et al. (2020) results. SaaS Service Quality has an impact on Social Capital which is consistent with Nahapiet and Ghoshal (1998), Chang and Wong (2010), Benlian et al. (2011), Sun et al. (2012), Chou et al. (2013), Chou et al. (2016). Social Capital has an impact on Customer Loyalty consistent with McAlexander (1995), Goodwin (1996), Nahapiet and Ghoshal (1998), Geyskens et al. (1999), De Wulf et al. (2001), Gefen et al. (2003), Wasko and Faraj (2005), Chiu et al. (2006); Chai et al. (2011), Hsu and Chang (2014), Ou et al. (2014). Finally, the structural Equation Modelling reveals a statistically significant indirect effect of SaaS Service Quality on Customer Loyalty through Social capital (P = 0.002, P < 0.05). The results of the mediation effect indicate that there is partial mediation effect of the Social Capital between the relationship of SaaS Service Quality and Customer Loyalty.

Our findings demonstrate that customers are motivated to develop loyalty toward both the service quality and the provider, demonstrating commitment and acting as a restraint on customers' exploration and continuation. Our findings are in line with earlier SaaS studies that show service quality is one of the most important factors in resolving clients' concerns about multi-tenant architecture (such as limited customization), which in turn affects customers' loyalty and post-adoptions intention.

The investments made assuage customers' concerns about the SaaS interaction quality by increasing their comfort level with the system as well as its flexibility and enabling them to explore new system capabilities. The researcher in this study only concentrated on the effectiveness of a particular SaaS service provider, which serves as the precursor to new system features of SaaS services related social capital. By encouraging the role of social capital in the post-adoption stage, outcome quality promotes relational and cognitive capital and reflects the effectiveness of the novel features in the workplace. Additionally, it includes characteristics like responsiveness and dependability of the SaaS system that let clients explore ways to improve the SaaS service features' alignment with system outcomes and employ social capital to boost their exploratory intent.

The premise of the relationship between social capital and customer loyalty is that loyalty to the service employee transfers into loyalty to the service provider. There is no question that there is a connection between firm loyalty and firm value, and that there is a correlation between customer loyalty to the service employee and consumer loyalty to the service firm. Therefore, service company managers will receive actionable guidance from knowing the factors that influence consumer loyalty to the service provider.

The claim that relational social capital will boost client loyalty is already supported by data from service research. Increased social capital results in greater loyalty to the service provider as network members become closer and show a sense of commitment to one another.

VIII. EMPIRICAL IMPLICATIONS

All associated industries are being transformed by software as a service (SaaS), with the telecom industry being one of the most crucial. This tremendous development is largely attributable to SaaS's ability to improve productivity and efficiency for both users and telecom firms.

Operators can do away with the obligation to offer the software through their telecom retail sites because SaaS by its very nature entails remote access. Customers' electronic devices must be downloaded and installed with the SaaS. Users gain full access to all of the features of the product via SaaS. As long as they have internet access, the telecom operator, clients, and any other parties involved can easily communicate and stay fully updated using the program.

The reliability of SaaS products and the loyalty of telecom consumers are clearly related, as the study showed. To promote customer loyalty and boost their competitiveness, telecom operators should therefore take the appropriate care to guarantee the quality of such unconnected SaaS services.

Additionally, given that the study revealed that SaaS quality has a direct positive impact on customer loyalty, telecom operators should consider strategic measures to maintain and strengthen the relevant service quality components in order to maintain or even improve their customer loyalty.

In reality, it is highly expensive to start and maintain a communications company. Telecom operators often invest substantially throughout the entire value chain to uphold and increase client loyalty. This requires a variety of commercial operations, such as efficient network deployment, sufficient customer service channels, competent product development, aggressive pricing, and continual promotions. However, because it is software, the creation of SaaS that is connected to other market verticals like Fintech has a comparatively little investment to construct and operate. It follows that SaaS with such cheap costs will have a high return on investment (ROI) if it improves customer loyalty; as a result, telecom operators are recommended to invest as much as possible in such services.

IX. LIMITATIONS AND FUTURE RESEARCH

When evaluating the findings of this study, it is important to keep in mind the limitations. To begin, the current study used a self-administered questionnaire in a cross-sectional sample. As a result, there's a chance that common procedure bias will affect our results; nonetheless, studies have shown that this is unlikely. Future studies could reduce this potential influence by gathering data from many sources and/or over
time periods. Second, because we chose a single instance industry, the findings should not be seen as necessarily typical of the entire workforce. Future research might look into a variety of businesses and contexts to see how generalizable the findings are. Finally, while the study was planned as quantitative research, the complexities of the interconnected aspects lend itself to additional qualitative and quantitative inquiries.

X. CONCLUSION

The main purpose of this research is to empirically draw on social capital theory to examine SaaS post-adoption in relation to the clients’ intentions to explore new SaaS service features in order to be loyal clients to the Egyptian telecom operators. The result of this study supports the acceptance of the four hypothesized relationships.

The current study, which is based on the literature on online services and the use of IS, examines how SaaS customers are motivated by service quality to promote loyalty. Six factors of SaaS service quality are the focus of our attention. Our research shows that customers are driven to form loyalties to the service quality and the supplier, indicating commitment and serving as a deterrent to customers’ exploration and continuing.

Telecom operators should consider strategic measures to maintain and develop the relevant service quality features in order to continue or even increase their customer loyalty, as the study indicated that the quality of SaaS has a direct positive impact on customer loyalty.

In actuality, starting and running a communications company is very expensive. In order to maintain and boost customer loyalty, telecom operators frequently make significant investments across the whole value chain. Various commercial operations are necessary for this, including effective network deployment, enough customer service channels, competent product development, competitive pricing, and ongoing marketing. Similar to Fintech, SaaS manufacturing has a relatively low startup and operating capital cost. Therefore, if SaaS with such low costs increases consumer loyalty, it will have a high return on investment (ROI); as a result, telecom operators are incentivized to invest as much money as possible in such services.

REFERENCES


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