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LET'S CLOUD WITH ME! USERS' WILLINGNESS TO USE CLOUD COMPUTING SERVICES AS A FUNCTION OF SOCIAL NORMS

Abstract

Purpose: The current study is theoretically grounded in the Technology Acceptance Model (TAM) and Social Influence Theory. It attempts to explain how acts of others influence attitudes and behaviors of individuals in the context of the adoption of cloud computing services.

Methodology: The present study used the convenience sampling technique to conduct empirical research. Data collection was performed via an online survey. We used Partial Least Squares Structural Equation Modelling (PLS-SEM) to test the proposed research model.

Results: Our findings suggest that a favorable social norm towards cloud computing services produces a positive and statistically significant effect on perceived ease of use, perceived usefulness, and willingness to use cloud computing services. In terms of mediating the role of perceived ease of use and perceived usefulness, findings revealed that perceived ease of use mediates the relationship between social norms and willingness to use cloud computing services.

Conclusion: The present study advances our understanding of the role of social influence and individual perceptions of technology (i.e., usefulness and ease of use) in the intention to use technology in the cloud computing context.

Keywords: Cloud computing, adoption, social norms, social influence

1. Introduction

Progress in information and communication technologies (ICT) has already shaped and is still shaping consumption patterns of Web-based information services. New technologies emerge on a daily basis and become part of our everyday lives. An increasing number of people throughout the globe have embraced new technologies to meet their needs. A critical advantage of modern ICT is the ability to handle vast amounts of data at high speeds, which implies that people require a stable and large-capacity data storage solution. Whether you are interested in storing your photos or videos from a memorable travel experience, or you want

to make a backup of your personal and business data from your personal computer or need to create shared documents with your colleagues, you will probably consider cloud storage as a gateway. Cloud computing (CC) refers to a large-scale parallel and distributed system that provides computing resources (such as servers, networks, storage, and applications) to users over the Internet on a payper-use basis (Mariani et al., 2021; Song et al., 2020). Regardless of whether you are an individual or an organization, as a user of CC, you are entitled to access computer resources just as you are entitled to use traditional utility services such as water, natural gas, or telecommunication services (Buyya et al., 2009). Nowadays, CC is a driving force of future innovations, particularly in deploying services that would be almost difficult to execute without cloud technology (e.g., Machine Learning - ML, Artificial Intelligence - AI, and the Internet of Things - IoT).

The coronavirus outbreak has resulted in social distancing, remote work environments, and other changes to people's everyday lives all across the globe. Due to COVID-19 caused by the coronavirus, individuals and organizations had ample opportunities to hear about CC services and even started using them on a daily basis. As a result, CC has emerged as an unsung hero of COVID-19 (Ashhab et al., 2021). Nowadays, we are witnessing a considerable expansion of CC applications. According to the report published by *Research & Markets* in April 2021, the global market for CC services, which was previously estimated to be worth US$ 313.1 billion in 2020, is expected to grow to US$ 937.5 billion by 2027, at a compound annual growth rate (CAGR) of 17 percent over the period 2020-2027. Amid the COVID-19 pandemic, enterprises (small, medium, and large) across industries, healthcare organizations, and educational institutions have been forced to move to digital environments (Ashhab et al., 2021; Md Noh & Amron, 2021), and as a result, usage of CC services has been increased in volume by both enterprises and individuals. Microsoft, for instance, had approximately 32 million active daily users of Microsoft Teams (Software as a Service CC, SaaS) at the beginning of the COVID-19 pandemic. However, the number of Microsoft Teams active users increased to 75 million in a couple of weeks (Warren, 2021).

The topic of the adoption of CC services at the individual (micro) and organizational (intermediate) level has attracted interest of scholars in the field of information systems (IS)/information technology (IT) (e.g., Adjei et al., 2021; Sharma et al., 2016; Song et al., 2020; Vu et al., 2020). Previous studies suggest that the main factors driving organizational-level adoption of CC are benefit-cost risk considerations, technological and organizational readiness, and environmental factors (Vu et al., 2020). Currently, the research stream focused on individual-level adoption of CC services is in its infancy (Mariani et al., 2021; Song et al., 2020). Only a few studies have addressed the factors influencing individual acceptance of CC services (e.g., Mariani et al., 2021; Song et al., 2020; Sharma et al., 2016). In terms of CC adoption at the individual level, scholars have used technology acceptance theory and unified theory of acceptance and use of technology to explore antecedents of an individual's intention to use or adopt CC. Perceived usefulness, perceived ease of use, trust, and self-efficacy are found to be significant predictors of an individual's willingness to adopt CC services (Mariani et al., 2021; Sharma et al., 2016). However, group influence on willingness to adopt CC services has seldom been explored (e.g., Ho et al., 2017). Hence the primary purpose of this study is to examine the role of social influence, i.e., social norms, in crafting users' willingness to use cloud computing services. Our central assumption is that individuals' willingness to adopt CC services is determined by perceived usefulness and ease of use, both shaped by social norms (group influence). The current study is theoretically grounded in the Technology Acceptance Model (TAM) and Social Influence Theory.

2. Literature review and research hypotheses

2.1 Cloud computing

As a new approach to the usage of computer technology, CC empowers people by allowing them to access, work on, share, and save information through the Internet (Park & Ryoo, 2013). With conventional information technology solutions, user data might get locked in specialized software accessible on a limited number of devices, discouraging them from being more effective in their job tasks. In contrast, CC services allow users instant access to their data from any location using multiple devices (Park & Ryoo, 2013). As a result, migration to CC services makes users more productive and enhances communication with their co-workers. Three service models can deliver CC

services: Infrastructure as a Service - IaaS, Platform as a Service - PaaS, and Software as a Service - SaaS (Assante et al., 2016; Balco et al., 2017; Song et al., 2020). Software as a Service (SaaS) refers to "the ability to 'rent' the use of software hosted by a third party, so the user does not need to buy additional hardware or software to support it" (Baldwin & Cromity, 2012, p. 121). This service model is among the first CC services provided, and it has the most significant number of users. Platform as a Service (PaaS) is a CC service that creates an environment for developing applications and services and providing them to end-users (Raza & Mahfooz, 2017). With the help of PaaS, developers and information technology administrators develop applications primarily intended for end-users in the web or mobile environment. Developers and information technology administrators can configure the system operating parameters but not the hardware infrastructure on which PaaS services run. Infrastructure as a Service (IaaS) is a CC service model primarily based on virtualization. Developers and information technology administrators can configure and set specific parameters at the hardware level, but cloud providers still maintain hardware and all components and elements necessary for IaaS (Raza & Mahfooz, 2017). This model allows the highest level of personalization compared to the previous two models (SaaS and PaaS), but at the same time, the user bears the highest responsibility.

To better understand the advantages and disadvantages of cloud technology, it is essential to present the basic characteristics of cloud deployment models (Aljabre, 2012; Raza & Mahfooz, 2017):

- Public Cloud refers to the "pay-per-use model", which in most cases involves the calculation of resources used per unit time (usually 1 hour). This cloud model implies the use of a cloud infrastructure that is shared among a large number of users, where user data are not mutually visible. It is crucial to point out that this model includes SLA (Service Level Agreement), which defines service delivery quality.
- Private Cloud is a cloud model within an organization or company whose infrastructure is used/managed exclusively for one organization or company. This model often has a fixed monthly charge for complete resources available to the user rather than the amount of resources used. This cloud model is much more expensive than the public cloud and is often used in cases where another cloud model cannot be used due to the user's internal procedures and policies or legal restrictions.
- Hybrid Cloud refers to the usage of its own data center (on-premises) in combination with other cloud models, for example, with one of the domestic or global cloud providers. In this way, users can use the existing infrastructure if they own it, but they can also use the benefits and advantages of cloud technology.

Since PaaS and IaaS are enterprise-level CC services, we focus on the SaaS model, a prevailing deployment model of CC services among individual users. While traditional solutions are based on the commercial off-the-shelf principle (COTS), according to which the vendors sell the application and can provide assistance in the installation process and use, the SaaS model is based on the principle of a monthly subscription, usually per user. Therefore, the user is not responsible for purchasing, installing, or implementing the solution, or the procurement or administration of the infrastructure necessary to operate an information system. In most cases, the SaaS model represents a cheaper and more efficient solution than the traditional solutions (Ma, 2007). Some examples of SaaS services are Salesforce.com, Microsoft Office 365, Box, Google Apps, Amazon Web Services, Dropbox, GoToMeeting, Cisco WebEx, Concur, SAP Concur, etc. (Fechter, 2020; Watts & Raza, 2019).

SaaS services are provided in a virtual Application Service Provider (ASP) environment. ASPs ensure that each SaaS service user receives sufficient resources required for the efficient operation of the service. Thus, the users are no longer in charge of purchasing hardware and licenses or installing, configuring, maintaining, and upgrading software itself. In this way, the user does not have to bear long-term monetary costs, and at the same time, it enhances the flexibility and agility of its information technology solution. Due to the characteristics of cloud technology and SaaS services, the implementation and provision of SaaS services to new users are remarkably fast and simple. A stable and fast Internet connection is necessary for the effi-

cient use of the service, i.e., access to SaaS services is possible from anywhere via any smart device. Besides the benefits, there are legitimate concerns regarding the security of cloud-based data storage. Users are primarily concerned about the possibility of data loss, information control/oversight, and compliance with information management standards (Ho et al., 2017). In addition to the presented potential risks, potential factors hindering the adoption of CC services at the individual level are insufficient information, knowledge, and understanding of infrastructure, costs, and other aspects of SaaS services (Assante et al., 2016). Specific risks and issues can also arise during the transfer of large data amounts, especially in the implementation and migration to SaaS services (Goyal, 2013). When using the SaaS model, the users will need to increase the Internet speed and its quality and availability significantly.

2.2 Development of hypotheses

Social group influence and willingness to use CC services. Social norms theory posits that individuals develop subjective norms in a way that they tend to adjust their attitudes and behaviors in response to the people around them (Berkowitz, 2005). Family members, friends, and co-workers all have a significant impact on a person's life. In general, people assume that they belong to specific groups. So when other individuals in such groups, especially those who are very important to them, start using information technology services (e.g., CC services), people would see the usage of such services as a "signal" of belonging to the group (Wu et al., 2021). In addition, individuals who are less knowledgeable about CC services will be more prone to use the opinions of others about the benefits and risks of CC services adoption. Since CC services are intangible, individuals can form opinions about ease of use and usefulness only after adopting CC services. In addition, people are often "ill-informed" about a new information system before utilizing it and during the early stages of adoption; thus, their intention to use a new information system depends on other opinions (Watjatrakul, 2013). Therefore, people tend to rely on the experience of knowledgeable users belonging to their social groups to form their attitudes towards CC services. Thus, the following hypotheses are formulated:

H1a: A favorable social norm toward CC positively affects perceived ease of use of CC services.

H1b: A favorable social norm toward CC positively affects perceived usefulness of CC services.

H1c: A favorable social norm toward CC is positively associated with users' willingness to use CC services.

Technology acceptance theory and willingness to use CC services. The technology acceptance model (TAM) is a common framework for analyzing how individual users accept CC services (Ho et al., 2017; Park & Kim, 2014; Sharma et al., 2016). There are four key TAM constructs, i.e., perceived ease of use, perceived usefulness, attitude toward utilizing, and behavioral intention. Perceived ease of use refers to "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, p. 320), while perceived usefulness is described as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p. 320). The central idea behind the TAM is that perceived ease of use and perceived usefulness are critical drivers of an individual's attitude toward using and the intention to use specific information systems or services (Davis, 1989). CC is known for its usefulness in many ways, including the fact that the user is not restricted by location, that it provides multiple opportunities to learn new software tools, and that it allows users to access a variety of hardware and software resources that they do not own (Sharma et al., 2016). Previous research suggests that perceived usefulness and ease of use have a significant positive effect on the intention to use CC services (e.g., Park et al., 2014; Sharma et al., 2016). Bearing this in mind, we formulated the following hypotheses:

H2: Perceived ease of use positively affects users' willingness to use CC services.

H3: Perceived usefulness positively affects users' willingness to use CC services.

H4: Perceived ease of use mediates the relationship between the favorable social norm and users' willingness to use CC services.

H5: Perceived usefulness mediates the relationship between the favorable social norm and users' willingness to use CC services.

3. Research methodology

The present study used the convenience sampling technique to carry out empirical research. Although the convenience sampling technique demonstrates certain limitations concerning the generalization issues, this sampling technique is an appropriate and pragmatic sampling approach when researchers focus on the target population directly accessible and willing to participate in a survey (Etikan et al., 2016). Data collection was performed in December 2020 and January 2021 via an online survey. At the end of the survey period, we collected 125 completed and valid responses. The profile of the respondents is presented in Table 1. In terms of CC services used, the most prominent CC service used by participants in this study is Software as a Service (83.2%). One-third of the participants are Platform as a Service users, and every fifth participant has experience of using Infrastructure as a Service.

Table 1 Sample profile

Characteristic	Frequency	Percentage
Gender		
Male	65	52.0
Female	60	48.0
Age		
Under 30	59	47.2
31- 40	37	29.6
Over 40	29	23.2
Education		
High school	47	37.6
Undergraduate	29	23.2
Graduate (Master's degree and PhD degree)	49	39.2
Type of the cloud computing service used		
Software as a Service users	104	83.2
Platform as a Service users	39	31.2
Infrastructure as a Service users	27	21.6

Source: Research results

The items included in the questionnaire were derived from previous studies. Survey items were adapted from previous studies encompassing social influence (Lu, 2014; Venkatesh et al., 2003), perceived ease of use (Sharma et al., 2016), perceived usefulness (Sharma et al., 2016), and willingness (Sharma et al., 2016). We modified all items to satisfy the purpose of the current study, i.e., whether social influence, perceived ease of use, and perceived usefulness affect users' willingness to use CC services. A 5-points Likert scale ranging from 1 ("Strongly disagree") to 5 ("Strongly agree") was used for all items. We employed Partial Least Squares Structural Equation Modelling (PLS-SEM) to analyze the measurement model and test the research hypotheses through a structural model. PLS-SEM is particularly attractive when researchers are interested in testing research models with small samples and non-normal distribution of data (Sarstedt et al., 2017). In the present study, Smart PLS 3.3.3. was employed to perform PLS-SEM analysis.

4. Results and discussion

Assessment of the measurement model. We assessed the internal consistency of the used scales by Cronbach's alpha coefficient. According to Hair et al. (2016), Cronbach's alpha values should not be below 0.7. In our case, values of Cronbach's alpha ranged from 0.789 to 0.893, indicating the internal consistency (reliability) of the used measurement scales. Convergent validity was assessed by the following statistical criteria: item loadings, the average variance extracted (AVE), and composite reliability (CR). Factor item loadings were above the recommended value of 0.7 (Sarstedt et al., 2017) for all but two items (see Table 2). As suggested by Hair et al. (2016), indicators with factor loadings between 0.40 and 0.70 are acceptable if the AVE and CR values are above the threshold. Moreover, all AVE values were higher than 0.5 (Sarstedt et al., 2017), indicating that all measures exhibit an adequate level of convergent validity. Moreover, CR values were satisfactory, ranging from 0.782 to 0.891. The results indicated that convergent validity was achieved and that all items (manifest variables) were linked to their respective latent variable well.

Table 2 The results of measurement models

Construct	Code	Item	Factor loading	Cronbach's alpha	CR	AVE
Social influence (SI)				0.814	0.806	0.518
	SI1	People around me believe that it is a good idea to use CC services.	0.744			
	SI2	People around me encourage me to use CC services.	0.701			
	SI3	The media encourages me to use CC services.	0.501			
	SI4	IT experts encourage me to use CC services.	0.882			
Perceived ease of use (PEOU)				0.789	0.782	0.568
	PEOU1	I think learning how to use CC is easy.	0.915			
	PEOU2	Learning how to use CC services require less mental efforts.	0.396			
	PEOU3	I think CC services are easy.	0.843			
Perceived usefulness (PU)				0.893	0.891	0.733
	PU1	I think CC services improve my performance.	0.791			
	PU2	I think CC services improve my productivity.	0.833			
	PU3	I think CC services are useful for my overall work.	0.938			
Willingness (WILL)				0.866	0.886	0.723
	WILL1	I am using CC services.	0.760			
	WILL2	I recommend the use of CC services to peers.	0.834			
	WILL3	I will be using CC services in the future.	0.946			

Note: Reliability and validity tests by using Smart PLS® 3. 3.3.
Source: Research results

Discriminant validity was evaluated using the following three statistical criteria: cross-loadings, the Fornell-Larcker criterion, and the Heterotrait-monotrait (HTMT) ratio of correlations criterion (Henseler et al., 2015). First, factor loadings for each item linked to the latent variable were greater than those of other latent variables. Second, the square root of each construct's average variance extracted (AVE) was higher than correlations between constructs (Fornell & Larcker, 1981). Third, as shown in Table 4, the HTMT ratio values ranged from 0.372 to 0.691, which are lower than the threshold value of 0.85 (Sarstedt et al., 2017). Moreover, we utilized a complete bootstrapping procedure to evaluate the distribution of HTMT statistics. As shown in Table 4, the confidence interval calculated from 5,000 bootstrap samples confirms that neither lower nor upper 95% percentile confidence interval (CI) includes a value of one. Hence we established the discriminant validity of the constructs used in our study.

Table 3 Correlations and the average variance extracted

Constructs	Mean	SD	SI	PEOU	PU	WILL
Social influence (SI)	0.814	0.036	0.719			
Perceived ease of use (PEOU)	0.789	0.041	0.411	0.754		
Perceived usefulness (PU)	0.893	0.027	0.480	0.437	0.856	
Willingness (WILL)	0.886	0.024	0.706	0.555	0.553	0.850

Note: The square root of the average variance extracted (AVE) of each construct are values in the diagonal; below the diagonal line are correlation values.
Source: Research results

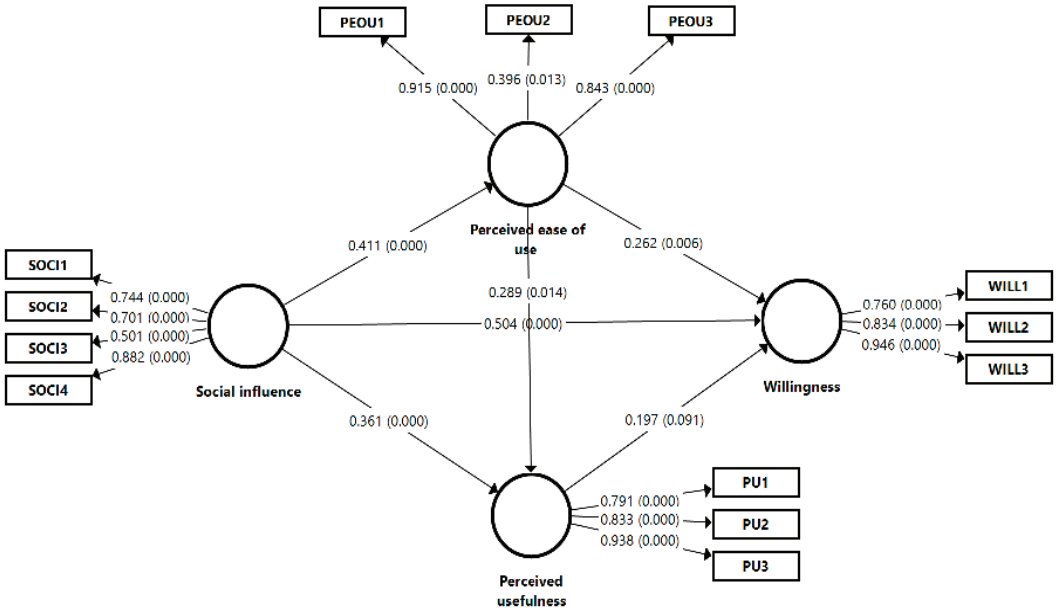
Table 4 Discriminant validity by HTMT values

	SI	PEOU	PU	WILL
Social influence (SI)	-			
Perceived ease of use (PEOU)	0.372 CI 95 (0.201 – 0.479)	-		
Perceived usefulness (PU)	0.466 CI 95 (0.313 – 0.607)	0.412 CI 95 (0.213 – 0.611)	-	
Willingness (WILL)	0.691 CI 95 (0.561 – 0.798)	0.557 CI 95 (0.383 – 0.707)	0.547 CI 95 (0.341 – 0.712)	-

Source: Research results

Furthermore, we used the variance inflation factors (VIF) to assess the degree of multicollinearity among constructs of interest. The PLS collinearity statistics revealed that the inner VIF values are between 1.000 and 1.427, which is above the threshold of 3.3 (Kock & Lynn, 2012). Therefore, the results confirmed that there are no multicollinearity issues in our data. Figure 1 depicts the Smart PLS output of the measurement and structural model.

Figure 1 Smart PLS output of the measurement and structural model



Source: Researchers' own findings

Assessment of the structural model. We assessed the structural model using the coefficients of determination (R^2) and an effect size (f^2), as suggested by Hair et al. (2017). The coefficient of determination (R^2) for willingness to use CC services was 0.604, indicating that 60.4% of the variation in willingness to use cloud computing services is explained by social influence, perceived ease of use, and perceived usefulness. In

terms of an effect size, the f^2 values above 0.35, 0.15, and 0.02 can be considered strong, moderate, and weak, respectively (Hair et al., 2017). In our model, two hypothesized relationships (H2 and H3) were supported. Still, the effect size (f^2) indicated a moderate effect of perceived ease of use on perceived usefulness and a weak effect of perceived ease of use on willingness to use CC services. The finding indicates that perceived ease of use is significantly related to perceived usefulness (H2) and willingness to use CC services (H3), but the impact is weak.

As presented in Table 5, most hypothesized paths are statistically significant. A favorable social norm towards CC services produces a positive and statistically significant effect on perceived ease of use ($\beta = 0.411$, $p < 0.001$), perceived usefulness ($\beta = 0.361$, $p < 0.001$), and willingness to use CC services ($\beta = 0.504$, $p < 0.001$), which supports H1a, H1b, and H1c. Furthermore, H2 was validated ($\beta = 0.289$, $p < 0.005$), but the f^2 effect size indicated a moderate effect of perceived ease of use on perceived usefulness ($f^2 = 0.099$; $p < 0.005$). This finding is consistent with the study conducted by Mariani et al. (2021), in which they established a positive link between perceived ease of use of CC services and perceived usefulness of CC services. Similarly, H3 was supported ($\beta = 0.228$ $p < 0.01$), but the impact of perceived ease of use of CC services on willingness to use CC services is relatively small ($f^2 = 0.133$; $p < 0.01$). In contrast, we did not validate the direct effect of perceived usefulness on willingness to use CC services ($\beta = 0.197$ $p > 0.01$). As a result, hypothesis H4 was not supported. This finding contradicts earlier research that found perceived usefulness to be an important driver of technology and information system adoption (e.g., Mariani et al., 2021; Md Noh & Amron, 2021; Sharma et al., 2016).

Table 5 Hypothesized paths are statistically significant

Hypothesis	Hypothesized path	Path coefficient	t-value	f^2 effect size	95% CI	Hypothesis analysis
H1a	SI → PEOU	0.411***	5.003	0.203	(0.251, 0.578)	Supported
H1b	SI → PU	0.361***	3.945	0.155	(0.177, 0.535)	Supported
H1c	SI → WILL	0.504***	5.812	0.469	(0.333, 0.669)	Supported
H2	PEOU → PU	0.289**	2.509	0.099	(0.055, 0.510)	Supported[a]
H3	PEOU → WILL	0.262**	2.899	0.133	(0.097, 0.457)	Supported[a]
H4	PU → WILL	0.197	1.622	0.070	(-0.056, 0.415)	Not supported

Note: ***$p < 0.01$; **$p < 0.05$: [a]f^2 values below 0.15 indicating a weak effect
Source: Research results

To test the mediating role of perceived ease of use and perceived usefulness, as suggested by Hair et al. (2016), we assessed the multiple mediation model. By considering the mediating roles of perceived ease of use and perceived usefulness simultaneously in one model, we are able to gain valuable insight into the mechanisms through which social influence affects users' willingness to use cloud computing services.

Table 6 Results of mediation analysis

Hypothesis	Hypothesized path	β	t-value	95 % CI	Hypothesis analysis
H5	SI → PEOU →WILL	0.107***	2.411**	(0.05, 0.039)	Supported
H6	SI → PU → WILL	0.071	1.451	(-0.008, 0.188)	Not supported

Source: Research results

Regarding the indirect effect of favorable social norms on willingness to use CC services mediated by perceived ease of use, we found that this effect is positive and statistically significant ($\beta = 0.107$; $p < 0.05$). However, the hypothesized indirect effect of social norms on willingness to use CC services me-

diated by perceived usefulness was positive but statistically insignificant. Thus, our findings suggested that perceived ease of use is a mediator between social norms and users' willingness to use CC services. Our results also indicate that perceived usefulness of CC services does not display a significant effect on users' willingness to use CC services.

5. Conclusion

The present study advances our understanding of the role of social influence and individual perceptions of technology (i.e., usefulness and ease of use) in the intention to use technology in the cloud computing context. Among the analyzed predictors (social influence, perceived usefulness, perceived ease of use), we found that social influence has the highest impact on individuals' willingness to use CC services. In addition, our findings suggest that social influence has an impact on an individual's decision to use CC services through the perception of easiness of using CC services. In the context of CC services, perceived usefulness does not significantly affect an individual's decision to use CC services. Moreover, perceived usefulness does not have a mediating role in the link between social impact and an individual's intention to use CC services.

The theoretical implications of the current study are twofold. First, this study sheds light on the mechanism by which social influence plays an essential role in driving users' willingness to use CC services. This study explains that social influence drives users' willingness to use CC services through users' perception of ease of use. Second, this study adds to current knowledge of the application of the TAM model in the context of CC services. Although previous research suggests that the TAM can be used to explain technology acceptance in different settings (e.g., Davis, 1989; Gangwar et al., 2015; Sharma et al., 2016), our study does not confirm the importance of perceived usefulness in predicting users' intention to use CC services. Our study suggests that individuals tend to prioritize ease rather than usefulness of CC services when deciding to use CC services.

This study informs service providers and organizational users of potential paths for increasing individual users' acceptance of CC services. Given the significance of the social impact on an individual's propensity to utilize CC services, organizations and service providers can inform potential users about the advantages of CC services via members of reference groups (e.g., friends, colleagues, mentors, etc.). Informed consumers will grasp the benefits of engaging in CC services and develop more positive views about them, resulting in their desire to utilize CC services. Additionally, service providers should bear in mind that customers have a propensity to jump on the bandwagon when it comes to CC services. The bandwagon effect is a well-documented phenomenon associated with the adoption and use of new technologies such as mobile phones, social networking sites, online films, and movies (Wang et al., 2019), and therefore plays a critical role in the dissemination of CC services.

This study has several limitations. First, it does not distinguish social influence of various reference groups (family members, friends, co-workers) who may impact users' intention to use CC services differently. Second, the study does not differentiate an individual's willingness to use CC services among three service models (Infrastructure as a Service - IaaS, Platform as a Service - PaaS, and Software as a Service - SaaS). Since perceived ease of use and usefulness differ between different service models, future studies focusing on one service model (e.g., SaaS) are welcome. Third, the present empirical research was carried out at a single point in time, and it does not capture the idea that users' attitudes and behaviors can change over time. Therefore, future studies should focus on behavioral change over time in the context of individuals' willingness to use CC services.

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