



Online Social Media (OSMS) Assimilation in Firm Supply Chain Performance During Covid-19

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Due to coronavirus (COVID-19) outbreak, the business environment has changed and supply chains around the world wreak havoc seriously. Online social media (OSMs) have become an increasingly essential form of ICT enabled services and touched every aspect of human being and business organization. Among fortune 500 organizations about 70% uses Twitter, Facebook and YouTube for marketing and Business and Forty-five percent supply chain professionals believe that social networks will make supply chain processes more efficient, responsive, and cost effective within 5 years. This study aims to explore the assimilation of OSMS supply chain network in order to boost up supply chain performance to tackle the disruption in supply chain caused from COVID-19.

210 data collected from supply chain professionals of travel, manufacturing, hospitality, fashion and media industries in gulf countries using online structured questionnaires. Structural Equation Modeling (SEM) is used for data analysis. A research model was developed based on diffusion innovation and use and gratification theory, institutional theory and transaction cost theory. The research model performs better and satisfies all necessary criteria for model fitness. The overall findings of the study indicated that the supply chain professionals assimilate and use the online social media to enhance supply chain performance to tackle the supply and demand disruptions caused by a major epidemic or pandemic outbreak like COVID-19. Technological feature (e.g., relative advantage), utilitarian features (e.g., supply chain visibility), institutional pressures and cost benefit dimension are significant direct features of online social media on assimilation in supply chain network.

Key words: *Supply chain network; online Social Media; COVID-19; Supply chain performance; Assimilation*



1 Introduction

The coronavirus (COVID-19) outbreak shows that pandemics and epidemics can seriously wreak havoc on supply chains (SC) around the globe (Queiroz et al, 2020). As a result of the COVID-19 pandemic, many businesses worldwide have experienced a significant change in their business environments, and it has become evident that it is essential to be able to handle unforeseen circumstances by implementing a range of crisis management techniques (Hedwall,2020). Due to the massive outbreak of acute respiratory syndrome coronavirus 2 (SARS-CoV-2), also known as COVID-19, beginning in December 2019, firms have experienced this extraordinary event. Almost all the nations of the world have affected by this outbreak; hence, WHO declared this COVID-19 as a pandemic on 11 March 2020 (WHO, 2020). This disruption has significant negative impacts on revenue, profit, stock return and overall supply chain performance (Thomas and Muhammad, 2019).

Even before making the declaration of a pandemic, nearly one-tenth of the Fortune 1000 companies have experienced severe production and material supply problems as a result of Wuhan, China, where it is widely believed that the COVID-19 originates. (Fortune, 2020).

Therefore, the operations of supply chains have become exceptionally difficult to maintain because some segments of the supply chain have ceased to operate (Breen and Hannibal, 2020; Ivanov, 2020b). All manufacturing firms, no matter what industry they are in, have been impacted by COVID-19 (Linton and Vakil, 2020), The kinds of results that appear depend on the level of demand for a given product, such as high-demand products or low-demand products. For instance, toilet paper, hand wash, and sanitizers have a rise in demand, whereas clothing and sports goods have a huge decline in demand (Bagshaw and Powell, 2020; Haren and Simchi-Levi, 2020). Also, when the demand for these products rises sharply, there is a sharp rise in the amount of raw material required but, at the same time, there is a substantial shortfall in supply during this pandemic (Ivanov, 2020a; Koonin, 2020; Linton and Vakil, 2020).

The contemporary world has been challenged by unprecedented disease outbreaks (Chew et al. 2004; Lin et al. 2020; Nigmatulina and Larson 2009), which significant negatively effects on the society as a whole, but also on the efficiency of operations and supply chain (SC) management (OSCM) business models. Such disruptive impacts frequently yield the ripple effects (Ivanov 2020a; Ivanov et al. 2018; Pavlov et al. 2019b). While SCs around the world have experienced devastating epidemics and pandemics, they are currently enduring an extremely dangerous, far-reaching disruptive epidemic outbreak in the form of a pandemic, which is COVID-19 (Boccaletti et al. 2020), which is considered as a new type of extremely contagious coronavirus, that poses a great threat. (Choi 2020; Ivanov 2020a; Ivanov and Dolgui 2020b).



There is a huge amount of competition in the marketplace today, and it is critical for companies to be innovative in order to stay ahead of the competition. Using modern technologies, such as social media, can improve the organization's supply chain management. It can raise the profile, increase the effectiveness of communication, give more control, and reduce labor and operational costs. When the organization has a more efficient and stable supply chain, it can enhance its customer satisfaction. The ripple effect of using social media to improve the supply chain management can expand outwardly across virtually the entire organization, which is great for business. Social media has made its way into the corporate world, with massive effects.

Although social media has swept the world in the past few years, many companies are still behind the times and aren't using this technology to their advantage. Sites like Twitter, Facebook, Google+, and LinkedIn can help organizations openly communicate with their customers, who will help them improve demand, increase customer service, and increase visibility. Online social media (OSMs) allows you to stay in touch, in real time, with your entire supply chain so you can manage it more efficiently, save time, keep everyone in the loop, and increase productivity. By engaging multiple partners, it increases collaboration and allows for open group conversations. Supply chain manager can track logistical updates, share data and knowledge, improve relationships, and monitor progress across your entire network of suppliers.

Additionally, when the organization improves its communication means, everyone can be contacted at all times. This can significantly reduce the labor hours and improve productivity when the supply chain partners aren't waiting around to check their email. Online Social media (OSMs) is an excellent place to source new talent for your supply chain. In fact, the supply chain manager can access to millions of suppliers. LinkedIn in particular can be a highly beneficial tool to use as part of procurement process. Using this supply chain partners can pinpoint exactly and look for in a new partner and find the right company to work with. Consequently, firms are not limited by geography or other factors.

When the supply chain partners use social media, they can improve communications with customers and their supply chain, increase visibility, and improve your sourcing methods. In turn, supply chain management process will be more streamlined and efficient, costs will be lower, and productivity will increase (Fournier, 2015)

Given the insufficiency of the research on production recovery models in view of a major outbreak, the following research questions are examined in this study:

RQ1. What are the factors of online Social media (OSM) help the firm to tackle both supply and demand disruptions caused by a major epidemic or pandemic outbreak like COVID-19?

RQ2. Does unified framework explore the assimilation of online social media (OSM) for supply chain network performance?

2 Research Frameworks and Hypothesis Development

This study developed a research model by incorporating diffusion innovation theory, use and gratification theory, institutional theory and transaction cost theory. It also adds some constructs from utilitarian context.

The proposed research framework is shown in Figure 1. The associated hypothesis of this framework is narrated in subsequent sections:

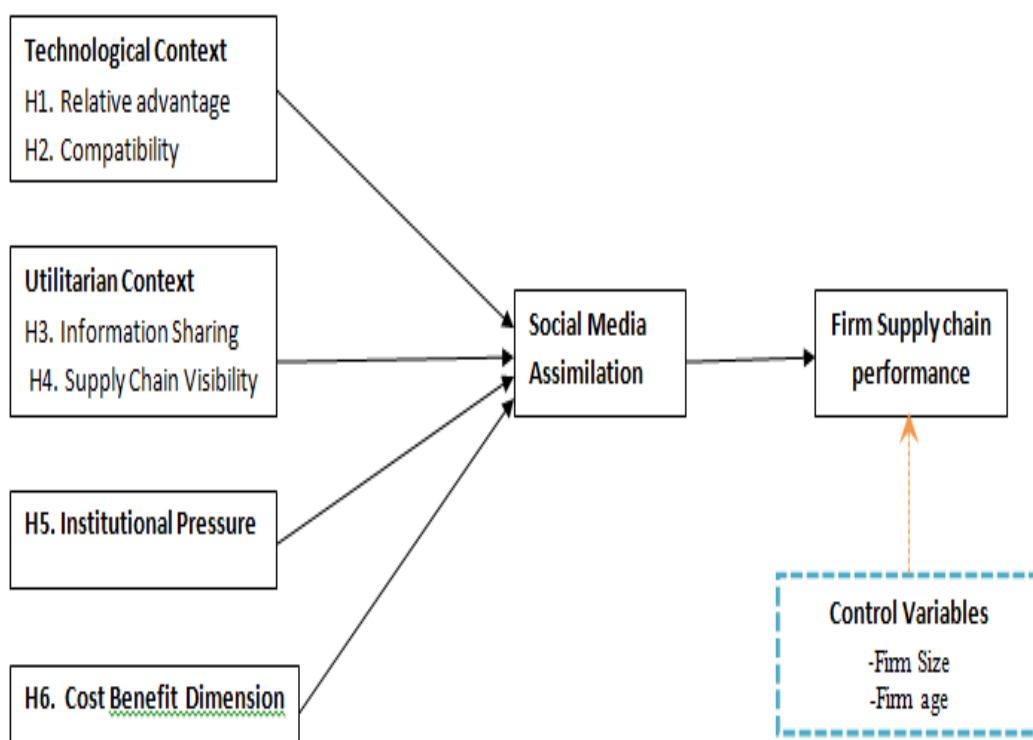


Fig 1: Research Model

2.1 Technological Context

2.1.1 Relative advantage

Relative advantage is the level of advantage gained by the innovation, relative to that of the existing alternative. It refers to the degree to which an innovation is perceived as providing more benefits than its predecessor [More & Benbasat 1991]. If the user believes that the new innovation will bring in more advantage compared to the preceding one, the new innovation has a greater relative advantage (Rogers, 1983). Relative advantage leads to increased

efficiency, economic benefits and enhanced status [Rogers 2003]. The more is the relative advantage of the innovation the more is the changes of the adoption (Ooi et al., 2011). Research suggests that when a user finds that a new technology offers them a relative advantage over an older one, they are likely to adopt it. [McCloskey 2006; Rogers 2003]. Past research has found that relative advantage of an innovation is positively related to the rate of adoption [Moore & Benbasat 1991]. The previous researchers show that the perceived relative advantages have a positive relationship with the users' intention to use the technology (Shih, 2007; Lee, 2006). In the context of mobile banking adoption, Al-Jabri and Sohail, 2012 found that when the customers perceive distinct advantages from mobile banking, they are motivated to adopt this technology. Likewise, the relative advantage of mobile commerce (Chung, 2014), a mobile payment (Duane et al., 2014) changes the consumer attitude towards its acceptance. The advantages of e-book reading motivated the consumer to adopt the e-reading technology (Qazi et al, 2018). The advantages of social media include convenient to use, easy access to relevant material, time saving, economical. During the pandemic period, online social media allow the different transaction partners of supply chain to communicate with each other conveniently. All these factors influence the organization intention to assimilate the online social media technology. Considering the above research findings and practical necessity, we are also forecasting that the comparative advantage of OSM will motivate the organization to assimilate this technology and the following hypothesis is proposed:

H1: The relative advantage of online social media has a significant effect on assimilation of OSMs in firm supply chain performance.

2.1.2 Compatibility

According to Rogers (1995) compatibility is a user's belief that how the innovation fits with their current needs, values and past experiences. Compatibility is a vital feature of innovation as conformance with user's lifestyle can propel a rapid rate of adoption [Rogers 2003]. The more compatible the innovation is with the user needs and values, the more is the changes of its adoption (Tornatzky and Klein, 1982; Shih and Fang, 2004; Antón et al., 2013; Chung, 2014). Rogers (1995) defined compatibility as "the degree to which an innovation is perceived as being consistent with the existing values, needs, and past experiences, of potential adopters". Users' acceptance of an innovation can be facilitated if they feel that it complements their current situation and does not require a lot of learning or a change in behavior (Chakravarty and Dubinsky 2005). OSMs requires modest levels of new learning and no behavioral changes, therefore possessing a high degree of compact ability. Previous studies have shown that the behavioral intention has a direct relationship to compatibility. (Wu and Wang, 2005; Chang and Tung, 2008). Research has shown that compatibility is a significant antecedent in determining consumers' attitude towards internet banking adoption in Malaysia (Ndubisi and Sinti (2006) Virtual shop adoption has been found to be dependent on the compatibility of devices (Chen et al. 2004), m-payment (Chen 2008), and mobile banking (Koenig-Lewis 2010; Lin 2011). Al-Gahtani (2003) found that the level of compatibility had significant correlation

with computer adoption and use in Saudi Arabia. The online social media gives the proper way to communicate with transaction partners of supply chain networks. Users can use this technology without previous training and adequate technical knowledge. It makes compatible and easy to use the supply chain network among the transaction partners. Considering the previous association between compatibility and adoption, we are also thinking that compatibility will motivate the organization to assimilate the OSMs for communication among the transaction partners. Based on these premise, we are proposing the following hypothesis

H2: The compatibility of online social network has a significant effect on the assimilation of O SMs in firm supply chain performance.

2.2 Utilitarian Context

Utilitarian gratification is related to goal-orientation and rationality (Stoel, Wickliffe, Lee, 2004). In this study, utilitarian gratification is composed of information seeking and supply chain visibility.

2.2.1 Information Sharing

Information seeking is defined as the extent to which users find out and obtain the necessary information to satisfy their perceived needs (Wilson, 1999). As an increasingly popular source, social media provides a convenient way for users to obtain information and plays a vital role in information seeking and information sharing (Kim, Sin, Yoo-Lee, 2014). Kim et al. (2014) indicated that undergraduate students frequently use various social media platforms, such as Wikipedia and YouTube, to find both factual and background information. Prior studies argued that social media users can satisfy their information need through information seeking, further affecting their behavior (Chung Austria, 2010; Ronda Derek, 2014). For example, Bunker et al. (2013) pointed out that Facebook users may obtain practical information and intend to "like" and subsequently generate word-of-mouth intentions If WeChat users are able to discover new or helpful information on other people's posts, then for the purposes of the study (Ku et al., 2013), this means that they can meet their information need (Stafford et al., 2004), and they may also be more likely to exhibit feelings of attraction. Gan (2017) explored that information sharing is one of the influential determinants of WeChat that influence the users to like the WeChat. Based on the theoretical findings, the researcher also thinking that Online social media will use information sharing platform and this attribute will motivate the organization to assimilate this technology in supply chain network. In the vein of these, we are forecasting.

H3: Information sharing will have significant influence on the assimilation of OSMs in firm supply chain performance.

2.2.2 Supply chain Visibility

Supply chain visibility indicates the presence of supply chain network among the transaction partners. It refers to the extent to which the activity will help the user to generate a particular image of supply chain and thereby influence how others perceive and treat the user (Goffman, 1959). The emergent of online social media provides new opportunities for organization's supply chain management visibility. Supply chain visibility has been found to be a strong characteristic of supply chain network and online social media makes this task conveniently Lee-Won, Shim, Joo, and Park (2014) On the topic of social identity and positive impression, those who try to seek social standing and reputation are more likely to post information on social network sites. It was found that Facebook users shared more positive information and connected with others to maintain their friendly image in a study conducted by Chen and Marcus (2012). Consequently, it is expected supply chain visibility will lead the organization to assimilate the online social media in supply chain network and the following hypothesis are formulated

H4. Supply chain visibility significantly affects the assimilation of OSMs in firm supply chain performance.

2.3 Institutional Pressure

According to DiMaggio and Powell (1983), mimetic pressures force an organization to change and become more like others. Success of organizations and their practices in the environment in which the firm operates has been cited by Haveman (1993) as evidence of organizational pressures. A firm will economize on search and experimentation costs by adopting solutions that are presumably working in other firms (Lieberman & Montgomery, 1988).

Among the three pressures ((DiMaggio & Powell, 1983), mimetic pressures indicate symbolic, cognitive and cultural aspects of organizational environments. It is also termed as the bandwagon effect. It claims that organizations or people may initiate specific task specifically the use of new technology due to their peers are using it not for the fitting of innovation with their own strategy. As the number of organizations in an industry or sector adopting a particular technology increase, pressure is exerted on others to "keep up" (Abrahamson, 1991; Abrahamson and Rosenkopf, 1993; Acedo and Casillas, 2007). It reinforces the common beliefs of actors among the peers (Scott, 2008; Hsu; Lin & Wang, 2014). These elements may also influence the motivation of actors to be part of OVSN (Zhu & Chang, 2014).

Normative pressures comprise ways to achieve goals or objectives and presuppose convergence between ideas, beliefs and goals (Hsu; Lin & Wang, 2014). This kind of pressures may constrain social behavior or enable actions, giving responsibilities and defining functions (Scott, 2014)

Coercive or regulatory pressures Constraint and enable behavior, these rules result in sanctions, increase power or give benefits to actors (Scott, 2014). These pressures highlight politics and strategies that influence technology adoption (Hsu; Lin & Wang, 2014).

In ERP assimilation Liang et al. (2007) and social media assimilation, mimetic normative and coercive pressures work through top management (Bharati et al., 2014). Teo et al. (2003) observed that mimetic normative and coercive pressures promote the assimilation of financial EDI. On the basis of these theoretical urgings, the researcher also thinking institutional pressure e.g. mimetic, normative and coercive positively motivate the organization to assimilate the OSMs in their supply chain network. Thus, the following hypothesis is postulated

H5: Institutional pressure (mimetic, normative and coercive) has positive impact on organizations 'intention to assimilate OSMs for their supply chain performance.

2.4 Cost Benefit dimension (CBD)

According to transaction cost economics (TCE), increased transaction costs cause more benefits. Monetary cost has long been recognized in the finance literature as well as marketing literature as a critical component in the development of perceived value and purchase intention for individual consumers (Howard and Sheth 1969, Dodds et al. 1991, Voss et al. 1998). In this study benefit measures the perceived monetary cost associated with the acquisition of information from OSMs. As the benefits from product consumption increase, the perceived value increases. Conversely, as the costs associated with product consumption decrease, the perceived value decreases. Several studies have found that transaction costs have an impact on a customer's purchasing intention. Kim and Li (2009) used TCE to investigate the online travel market and customer satisfaction and loyalty in relation to the transaction costs of doing business over the internet. Yen et al. (2013) extended TCE to C2C environment and investigated the determinants of bidders repurchase intention in online auctions. By applying a mixed research method Munguatocha et al, (2011) identified budgeting and accountability as influential components for adoption of social network as learning platform.

Similar to past research utilizing value-based models, perceived fee parsimoniously indicates an individual's sacrifice based on extrinsic factors, as a higher fee brings about a poorer impression of value. (Kim et al. 2007, Lee et al. 2007, Turelet al. 2007). The evidence from both the marketing and IS literature supports the argument that perceived benefit directly affects purchase intention (Baker et al. 2002, Cronin et al. 2002, Chen and Dubinsky 2003, Turel et al. 2010). Besides. in the context of web-enabled wireless technology, research has also found a significant positive relationship to be present (Kim et al. 2007, Lee et al. 2007, Turel et al. 2007). A recent development is the application of 'value-based' research models to technology use, where the variable, 'perceived value,' assesses the utility of technology by gauging the advantages and drawbacks associated with it (Setterstrom et al., 2013) and has been shown to be predictive of intention to use (Cocosillgonor, 2015;&Hong, Lin,Hsieh,

2017). We argue that, regardless of whether the assimilation decision pertains for supply chain network, perceived benefit after deduction of associated cost will be a significant predictor in the development of intention to assimilate the OSMs in supply chain network. Therefore, we posit the following hypothesis

H6: Cost Benefit dimension (Benefit after deduction cost) will have positive impact on intention to assimilate OSMs in supply chain performance.

2.5 Online Social Media Assimilation and Supply Chain Network Performance

In the context of social media, previous studies have investigated organizational usage of social media; however, few studies have examined its impact on organizational supply chain performance. For instance, Ferrer et al. (2013) found that the use of social media technologies positively impacts the social capital of an organization and therefore its performance. Similarly, Rodriguez et al. (2014) also found that social media usage in an organization positively affects the customer-orientated process, which in turn affects the performance of an organization. Furthermore, the literature claims that social media can reduce the amount of effort and money spent on integrated marketing activities (Kim and Ko, 2012). Social media can have a dramatic influence on organizations in areas such as enhancing a brand's reputation; improving value, relationship, and brand equity (Kim and Ko, 2012); digital advertising and promotion; the handling of customer service issues; mining innovative ideas; and building customer relations (Solis, 2010). More specifically, social media assists companies to build stronger customer relationships and customer service (Parveen et al., 2014). Social media is a cost-effective method for marketing activities (Paridon and Carraher, 2009). The lower costs associated with marketing and customer service efforts, particularly through social media, are possible due to the usage of social media in organizations. (Parveen et al., 2014). Moreover, through social media, organizations can get more information about the market, competitors, and mainly their customers and their needs. This improves the information accessibility of the organizations (Parveen et al., 2014). Even though social media provide various benefits to organizations, studies investigating the influence of social media on these areas of organizational performance are very few. When organizations assimilate social media effectively for various tasks like marketing, customer relations, and information search, then it is likely to have a positive influence on organizations, especially in terms of cost reduction (marketing, and customer service), improvement in customer relations, and enhancement in information accessibility. Considering this theoretical finding, we also believe that assimilation of online social media will have positive influence on organizational supply chain performance such as reducing the cost of communication with transaction partners, easier access of competitor and market information and faster dissemination of information among the transaction partner. Subsequently, we are proposing the following hypothesis.

H7: Assimilation of online Social media positively improves the supply chain performance.



3 Methodology

3.1 Research Method

In this study, a quantitative (questionnaire) strategy is used to explore the objectives of this research. In the context of IS research, a substantial number of researchers use the quantitative research method (Chung et al.,2017; Matook et al. ,2015; Maier et al.,2015; Yu et al., 2015; Bharati et al.,2014; Kekolahti et al., 2015; Krasnova et al.,2010).

Based on the research question, this study is a positivist approach with a survey as the method.

3.2 Research Settings

Due to dearth research on the assimilation of online social media (OSMs) in supply chain network during pandemic situation caused by COVID-19, an exploratory research was most reasonable (Zikmund et al.,2010). In order to investigate the assimilation of OSMs in supply chain context, positivist approach is more justifiable (Lee,1991). To test proposed research model and hypothesis, we selected the supply chain managers in five gulf countries (e.g. Saudi Arabia, Kuwait, Oman and United Arab Emirates) as the research settings for some causes. OSMs are emerging technology in those countries and the users have seen a meteoric growth. Moreover, In Gulf countries a number of supply chain professionals are altering their communication pattern by swelling their participation on online. These reasons motivate researcher to select the supply chain professionals from gulf countries in this study. The researcher obtained informed consent prior to commencing the survey so that the prospective supply chain professionals can be explained in detail.

3.3 Sample Size and Data Collection

The target population for this study is the supply chain managers of gulf countries who are dealing the supply chain networks of respective organizations. There are six gulf countries in the world namely Saudi Arabia, Kuwait, Qatar, Oman, Bahrain, and United Arab Emirate. This research collects data from five Gulf countries namely Saudi Arabia, Kuwait, Qatar, Oman, and United Arab Emirate purposively. The five countries represent the gulf countries perfectly.

The sample frame of this study is the list of organizations enlisted in Saudi Arabia, Kuwait, Oman, Qatar and United Arab Emirates. In this study including independent and dependent variable the proposed multivariate regression model has 30 items. Following the previous studies and Hair et al. (1998) recommendation, this study selected a sample size of 210 for data analysis using structural equation modeling (SEM).

In order to collect data easily, questionnaire was developed using google form. E-mail addresses of 1500 supply chain mangers collected from five gulf countries. URL link to the

web-based survey questionnaire was sent through an email invitation that also explained the purpose of the study. The respondents were assured about their anonymity and told to provide the aggregate report after completion of research.

4 Analysis and Results

4.1 Demographic Characteristics of Sample

Table 1 Demographic Analysis

Indicator	Description	Frequency	Percentage	Indicator	Description	Frequency	Percentage
Industry	Fashion	33	16%	OSM Platform	Facebook	67	32%
	Hospitality	24	11%		WhatsApp	62	30%
	Travel	54	26%		Twitter	42	20%
	Media	27	13%		YouTube	5	2%
	Manufacturing	72	34%		Google+	1	0%
Size of the Firm	Small	113	54%		WeChat	2	1%
	Medium	71	34%		LinkedIn	0	0%
	Large	26	12%		Others	0	0%
Country	UAE	74	35%		All	31	15%
	Oman	12	6%		Hardware Used	Smartphone	115
	Qatar	12	6%	Desktop		10	5%
	Saudi Arabia	94	45%	Laptop		30	14%
	Kuwait	18	9%	Tablet		8	4%
			Other	0		0%	
IS Employee	Less than 5	50	24%	All		47	22%
	5 to 10	53	25%	Age of the Firm		Less than 1 year	13
	11 to 15	51	24%		1 to 5 year	58	28%
	16 to 20	22	10%		6 to 10	66	31%
	21 to 25	29	14%		11 to 15	44	21%
	26 to 30	2	1%		More than 15	29	14%
	More than 30	3	1%				

Majority of the respondents (32%) use Facebook for communication with their supply chain partners using OSMS in gulf countries. Remaining organization (30%) WhatsApp, (20%) twitter and (15%) use all types of platform for their communication in supply chain network. Majority of the respondents (55%) use smartphone for communication with their supply chain

partners. On the other hand, 14% use laptop, 5% use desktop, 4% use tablet and 22% use all types of hardware for communication using online social media among their partners of supply chain networks in gulf countries.

4.2 Hypotheses Results

Our hypothesis testing result implies that Hypothesis (1) is not supported because of not having statistically significant value (at $p < 0.05$, $\beta = 0.058$, $t = 0.958$). It indicates that relative advantage of online social media has not significant positive influence on supply chain professionals to adopt the OSMs for supply chain communication. Computability shows statistically positive effect on assimilation of OSMs (at $p < 0.01$, $\beta = 0.234$, $t = 3.101$). So H2 is also supported. It indicates the technological aspect of OSMs partly influence the supply chain professional to assimilate this system in their communication. Hypothesis (3) is not supported because the statistical value of information sharing (at $p < 0.05$, $\beta = -0.068$, $t = 0.869$) is insignificant. So we cannot accept the hypothesis (3). Moreover, Supply chain visibility has statistically significant impact on OSMs assimilation among the supply chain professionals because the produced value is (at $p < 0.05$, $\beta = 0.197$, $t = 2.145$) is significant. Therefore, we cannot reject hypothesis (4). It implies that the utilitarian aspect of online social media partly influences the supply chain professional to assimilate this technology for better communication among their partners during pandemic situation. We accepted hypothesis (5) since institutional pressure shows significant positive impact on assimilation of OSMs (at $p < 0.05$, $\beta = 0.189$, $t = 2.138$). It implies that institutional pressure motivates the supply chain professionals to assimilate the OSMs for their communication among their partners. We also accepted the Hypothesis (6) because the effect of cost benefit dimension on supply chain professional's intention to assimilate OSMs for communication among their partners positively significant (at $p < 0.001$, $\beta = 0.344$, $t = 4.232$). It seems cost benefit consideration is one of the motivators for assimilation of OSMs among the supply chain professionals.

Table 2: Hypothesis Result

Hypothesis	Relationshi p	Std.Beta	T Statistics	P Values	Decision
H1	RA -> SA	0.058	0.958	0.338	Not Supported
H2	CT -> SA	0.234	3.101	0.002	Supported
H3	IS -> SA	-0.068	0.869	0.385	Not Supported
H4	SCV -> SA	0.197	2.145	0.032	Supported
H5	IP -> SA	0.189	2.138	0.033	Supported
H6	CBD -> SA	0.344	4.233	0.000	Supported
H7	SA -> SCP	0.886	44.525	0.000	Supported

Legend: p: significance: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Overall, the assimilation of OSMs among the supply chain professionals for communication among their partners has strong positive impact on supply chain performance of the organization. because it has statistically strong significant value ($p < 0.001$, $\beta = 0.889$, $t = 44.525$) and therefore, we accept the H7 (see Table 3.9 for details).

Furthermore, it is also found that the predicting power (R^2) of dependent variable such as social media assimilation (SA) is 0.822, and chain network performance (SCP) is 0.789. Chin (1998) & Höck and Ringle (2006) suggests results beyond the threshold level “0.67”, “0.33” and “0.19” to be “substantial”, “moderate” and “weak” respectively. All the values were above the recommended cut of criterion 67%. The model explains 82.2% variance of social media assimilation, and 79.0% of variance in the social media impact on supply chain network. The study also examined for effect size (f^2) to check the significant impact of the research model. It is well-defined as “the degree to which the phenomenon is present in population” (Cohen’s, 1988). Cohen’s (1988) advised 0.02 represents a “small”, 0.15 represents a “medium” and 0.35 represents a “high” effect size respectively. So far our model suggests that supply chain network performance ($f^2 = 0.777$) has large effect sizes, whereas social media assimilation ($f^2 = 0.200$) has a medium effect size.

Furthermore, the study also checked the models' predictive power with a non-parametric Q2 Stone-Geisser's value (Geisser, 1974) to examine the substantive influence of the research model. Cohen’s (1988) statistical measures were also followed to examine the predictive relevance (Q2) (Garson, 2016). Thus, the model suggests that social media assimilation ($Q2 = 0.714$), and supply chain network performance ($Q2 = 0.382$) have a large effect size. The result also confirmed predictive relevance of this model.

Table 3 Mediation effect of Social Media Assimilation

	Std. Beta	STDEV	T Statistics	P Values
CBD -> SA -> SCP	0.306	0.072	4.222	0.000
CT -> SA -> SCP	0.208	0.067	3.108	0.002
IP -> SA -> SCP	0.168	0.079	2.127	0.034
IS -> SA -> SCP	-0.060	0.069	0.873	0.383
RA -> SA -> SCP	0.051	0.053	0.962	0.336
SCV -> SA -> SCP	0.175	0.081	2.151	0.032

Note: CBD: Cost Benefit Dimension; CT: Compitability; IP: Institutional Pressure; IS: Information Sharing; RA: Relative Advantage; SA: Social Media Assimilation; SCP: Supply Chain Performance

For significance testing in bootstrapping, we used SmartPLS bootstrapping to find out the specific indirect effect of mediator between different predictors and outcome variable. From table 3.10 we see that social media assimilation mediates between cost benefit dimension and

supply chain network performance because software produced result is significant (at $p < 0.001$, $\beta = 0.309$, $t = 4.222$). Social media assimilation also mediates compatibility and supply chain network performance because result obtained from is significant (at $p < 0.001$, $\beta = 0.208$, $t = 3.108$). The path from institutional pressure to supply chain network performance through social media assimilation is significant (at $p < 0.05$, $\beta = 0.168$, $t = 2.127$). It also revealed that social media assimilation properly mediates between supply chain visibility and supply chain network performance because software produced result is significant (at $p < 0.05$, $\beta = 0.175$, $t = 2.152$). On the other hand, social media assimilation does not mediate between information sharing and supply chain network performance (at $p > 0.05$, $\beta = -0.060$, $t = 0.873$). It also unveiled that social media assimilation does not mediate between relative advantage and supply chain network performance because the produced result is not statistically significant (at $p > 0.05$, $\beta = 0.051$, $t = 0.962$). Thus it asserts that social media assimilation mediates the relationship of different constructs with supply chain network performance.

5 Discussions

The purpose of this paper is to examine the supply chain network performance during pandemic situation caused by COVID -19 by developing an integrated research model. Therefore, we reviewed diffusion innovation theory, use and gratification theory, institutional theory and transaction cost theory to build a sophisticated model that might elucidate the assimilation OSMs as communication platform among supply chain partners during pandemic situation caused by COVID -19. The hypothesized research model combined eight variables: RA (relative advantage), CT (compatibility), IS (Information sharing), SCV (supply chain visibility), IP (Institutional pressure), CBD (cost benefit dimension), SA (supply chain assimilation), and (SCP supply chain network performance). The overall explanatory power of this research model was relatively high with an R^2 of 82.7 per cent for supply chain assimilation and R^2 of 78.9 percent for supply chain network performance. This is relatively high percentage when compared with previous studies in IS acceptance including Haque et al., (2020) with R^2 45.6 percent, Haque and Khan (2020) with with R^2 47.8 percent and Oliveira et al. (2014) with R^2 53.4% The results of hypothesis test directed that there were noteworthy relations among the eight constructs among them five hypotheses are supported. The path coefficient results implied that CT, SCV, IP, and CBD are significant positive determinants of online social media assimilation in supply chain network. Finally, the study outcomes also exposed online social media assimilation as the more powerful interpreter of social media impact on supply chain network.

First, the technological features of online social media have positive influence on the assimilation of online social network. compatibility of online social media has significant impact on the assimilation of online social media in supply chain network. It makes compatible and easy to use the supply chain network among the transaction partners. This output is consistent with the finding of Ndubisi and Sinti (2006) where they found that compatibility is a significant antecedent in determining consumers' attitude towards internet banking adoption

in Malaysia. It is also inconsistent with Chen et al. (2004) in virtual store adoption research, Chen (2008), Koenig-Lewis (2010) and Lin (2011) in mobile banking adoption and with Gahtani (2003) in computer adoption research where they explored significant influence of compatibility in the adoption of technology in different perspectives.

Another technological feature of online social media has not statistically significant impact on the assimilation of online social media in supply chain network. This is inconsistent with More and Bebasate (1991) and Rogers (2003) where they explored that relative advantage of technology influence the users to accept the technology. This result is also consistent with (Chung, 2014) where they explored that relative advantage has significant influence towards the adoption of mobile payment and (Duane et al., 2014) consumer attitude towards its acceptance of e-book reading.

Second, the utilitarian aspect of online social media is unveiled as significant antecedent on the assimilations in supply chain network during pandemic situation. Supply chain visibility has significant impact on the assimilation of online social media in supply chain network for communication among supply chain partners. This result is pragmatic and vivid that online social media has significant influence on increasing the visibility of supply chain among the supply chain partners. This result is consistent with Lee-Won, Shim, Joo, and Park (2014) where they explored that users who pursuit social identity and positive impression are more likely to disclosure and share information in social network sites. This finding is also consistent with the Chen and Marcus (2012) where they revealed that Facebook users disclose more positive information and interact with others to maintain their friendly image and increase their visibility on virtual world.

Interestingly another utilitarian aspect of online social media namely information sharing is not statistically significant. Though it is assumed that online social media helps the user to share their information more rapidly than other medium. This result is inconsistent with as Kim, Sin, Yoo-Lee (2014) where they explored that social media provides a convenient way for users to obtain information and plays a vital role in information seeking and information sharing further increase the access of various information. This result also opposes the finding of Bunker et al. (2013) and Gan (2017) where they explore that Facebook and Wechat users can obtain useful information and then intend to click “like” and generate word-of-mouth intention respectively.

Third, the study included the Institutional pressure as a direct antecedent of OSMs assimilation in supply chain network for communication among supply chain partners during pandemic situation. The outcome suggested that Institutional pressure appears to be the most significant determinant of assimilation of OSMs. This indicates different types of institutional pressure (e.g., mimetic, normative and coercive) advances the different institutions to assimilate the emerging communication technology platform such as OSMs. Since institutional pressure has been introduced in OSMs assimilation research, there are scarce findings in this regard. This result is little bit similar to the finding reported in Haque et al. (2019) where they explored that



institutional pressure particularly environmental and organizational factor are most important antecedent in the adoption of social networking sites. This finding also consistent with Bharati et al (2014) where they indicated that different types of institutional pressure have a significant influence on the social media assimilation in organization through absorptive capacity and top management.

Forth, the study also introduced cost benefit dimension as direct determinant of online social media for assimilation in supply chain network for communication during pandemic situation though some studies used this perceived fee and perceived benefit as different construct in different settings. It explored that cost-benefit dimension has constructive effect on the organizational assimilation of OSMs in supply chain network. It implies that organization consider the perceived cost incurring for perceived benefit from using the systems. This implication is concurrent with the findings reported by Setterstrom et al. (2013) where they discovered that perceived fee and perceived value has significant impact on user adoption to use web enabled wireless technology. This finding is also concurrent with Kim et al (2007) where they examined willingness to adopt the technology requires higher perceived value. This implication is also similar with Cocosi and Igonor (2015) and Hong, et al. (2017) in different research perspectives.

Finally, the mediating construct online social media assimilation has robust and momentous effect on the social media assimilation in supply chain network. This finding is consistent with Ferrer et al. (2013) and Rodriguez et al. (2014) where they found that the use of social media technologies positively impacts the social capital of an organization and therefore its performance. This upshot also supports the findings of Parveen et al. (2014) where they found, social media helps organizations to enhance customer relations and customer services and reduces the cost of marketing and customer service activities. A substantial number of technology adoption research in general (e.g. Kim et al, 2009; Venkatesh et al., 2012) and particularly in social networking sites (e.g. Dumpit and Fernandez, 2017; Rauniar et al., 2017; Lorenzo-Romero et al., 2011) confirmed that intention to assimilate the social media is the powerful predictor of actual behavior.

At last, the study explored social media assimilation properly mediates the relationship of different constructs with social media impact on supply chain network performance. The entire proposed hypothesis for mediation analysis is supported by the statistical result except information sharing and relative advantage. It indicates social media assimilation is an appropriate mediator of this research model.



6 Conclusions

This research is a response to a call for the assimilation of online social media (OSMs) in supply chain network for communication among the supply chain partners. The study developed a research model by examining diffusion innovation theory, institutional theory, Uses and gratifications theory and transaction cost theory. Consequently, the study pooled the constructs from different theories and also pooled some variables from utilitarian context and develops a model that would elucidate the adoption of OSMs by bearing in mind reactions from the differentiated class of supply chain professionals. Five hypotheses significantly performed of the proposed research model. Therefore, it is obvious from the empirical results that the compatibility, supply chain visibility, institutional pressure and cost benefit dimension are the direct determinants of OSMs and have effect on the assimilation of social media. On the other hand, relative advantage and information sharing have not direct effect on the assimilation of online social media. It also unveiled that utilitarian value (supply chain visibility) is strong determinant of OSMs for supply chain network. Moreover, the research explored that supply chain assimilation has positive and strong impact on the supply chain network. Over all, the study asserts the significance of research model in the setting of OSMs among the supply chain professionals during pandemic situation caused by Covid-19 in gulf countries. Finally, this study will enrich the MIS and marketing literature and provides practical insinuations for supply chain managers, firms, regulatory authorities and OSMs service providers.



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