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## Antecedents of Knowledge Sharing in Educational Institutions using Social Media E-Transactions: Facebook and WhatsApp

العناصر الشرطية لمشاركة المعرفة في المؤسسات التعليمية باستخدام وسائل التواصل الاجتماعي

في المعاملات الإلكترونية: الفيسبوك والواتساب

### Abstract

Knowledge is the only organisational asset that appreciates overtime. Thus, Knowledge sharing (KS) is considered a calling need rather than a luxury for organisations. Yet, only few studies have been conducted to explore KS issues in the real context of developing countries, and specifically in the Egyptian context, where social media plays an extremely important role.

Accordingly, this study investigates and seeks to determine the antecedents of knowledge sharing in educational institutions using social media e-transactions in Egypt. The study used a structured questionnaire to collect data from the CMT and PQI faculties of the Arab Academy for Science, Technology and Maritime Transport (AAST-MT) University, as the top non-governmental non-profit organisation in Egypt.

The research proposed a model for knowledge sharing KS for both types of social media; Whatsapp and Facebook. The model contains six antecedents of knowledge sharing; namely Technology, Organization culture, Personality, Time, Management Support, and organization structure that happen through social media. The research also compares the knowledge sharing model shown between Whatsapp and Facebook undergraduate and postgraduate users, as they are the two most popular social media currently used in the AASTMT. Significant difference between the type of social media used and variables affecting knowledge sharing between postgraduates and undergraduates were discovered.

The current study paves the way for motivating staff at educational institutions to share their knowledge. It gives the novel conceptual model based on why people do not share their knowledge and how KS practices can be fostered among the employees by the type of social media for both undergraduate and postgraduate institutions.

**Key words:** knowledge sharing, social media technologies, education institutions.

### ملخص البحث

المعرفة هي الأصول التنظيمية الوحيدة التي تقدر قيمتها مع الاستخدام طول الوقت وبالتالي، تعتبر مشاركة المعرفة أمر هام و ليس ترفا للمنظمات. ومع ذلك أجريت دراسات قليلة في مشاركة المعرفة لاستكشاف القضايا في السياق الحقيقي للبلدان النامية، وتحديدًا في السياق المصري، حيث تلعب وسائل الاعلام الاجتماعية دورا هاما للغاية. وفقا لذلك، فإن هذه الدراسة تبحث وتسعى لتحديد الأسس من مشاركة المعرفة في المؤسسات التعليمية باستخدام المعاملات الإلكترونية بوسائل الإعلام الاجتماعية في مصر. واستخدمت الدراسة قائمة استقصاء منظمة لجمع البيانات من كليات الإدارة و التكنولوجيا و معهد الإنتاجية و الجودة من الأكاديمية العربية للعلوم و التكنولوجيا و النقل البحري حيث أنها مصنفة الأولى كمنظمة/جامعة غير حكومية و لا تهدف للربح في مصر.

واقترح البحث نموذجا لمشاركة المعرفة لكلا النوعين من وسائل الاعلام الاجتماعية الواتساب و الفيسبوك. ويتضمن النموذج على ستة معايير من مشاركة المعارف؛ وهي التكنولوجيا، والثقافة المنظمة، والشخصية، والوقت، والدعم الإداري، وهيكل المنظمة التي تحدث من خلال وسائل الاعلام الاجتماعية. ويقارن البحث أيضا نموذج مشاركة المعرفة بين مستخدمي الواتساب و الفيسبوك لطلبة الجامعة و الدراسات العليا، باعتبارهم أكثر وسائل التواصل الاجتماعي شعبية في الأكاديمية العربية للعلوم و التكنولوجيا و النقل البحري. و قد تم اكتشاف فرق كبير بين نوع و وسائل الاعلام الاجتماعية المستخدمة و المتغيرات التي تؤثر على مشاركة المعرفة بين طلاب الدراسات العليا و الطلاب الجامعيين.

تعتبر الدراسة الحالية تمهيدا لتحفيز الموظفين في المؤسسات التعليمية على مشاركة معارفهم. و تقدم الدراسة النموذج الجديد أستنادا الى الأسباب التي تعرقل مشاركة المعرفة بالمؤسسات و كيف يمكن تعزيز ممارسات المشاركة بين الموظفين حسب نوع من وسائل الاعلام الاجتماعية لكل من المؤسسات الجامعية و الدراسات العليا.

**الكلمات الدالة:** مشاركة المعرفة، وتقنيات وسائل التواصل الاجتماعي، والمؤسسات التعليمية.

## 1. Introduction

We live in a knowledge-based society, in which knowledge available to firms is a key strategic resource that can produce a sustained long-term competitive advantage (Gaál et al., 2015; Yesil et al., 2013). Sharing of knowledge helps individuals and organizations discuss certain topics, which can encourage the generation of new ideas and facilitate managing daily routine activities effectively. Therefore, it is obvious that managing knowledge properly can bring numerous benefits to organizations. Reuse of organizations' best practices and ways of doing business, allowing better and faster decision-making, encouraging innovation and growth are on top of the list.

Since knowledge is a combination of data and information together with experience and skills that help in decision making, people are the key players in knowledge sharing; as they are the ones who will create, share and use the knowledge. Therefore, an organization's ability to effectively influence knowledge leveraging is highly dependent on its employees. This fact sheds light on the main challenges and factors that would motivate individuals to take the decision of actually sharing knowledge or not in their organizations. The following section will review what is meant by knowledge sharing, together with the main factors that encourage knowledge sharing as revealed by literature. After that, knowledge sharing using social media e-transactions will be explored, followed by a section on knowledge sharing in Egypt in particular.

### 1.1 Research Problem

Despite the obvious penetration and use of social media in the Egyptian so-

ciety, knowledge sharing is not yet fully realised by organizations in Egyptian organisations (El Saghier et al., 2015). Only few studies were conducted in the Egyptian context that tackled the factors encouraging knowledge sharing in organizations (El Badawy and Magdy, 2015; Elfar et al., 2017; Shaarawy and Abdelghaffar, 2017). This highlights the importance of further investigating the factors influencing knowledge sharing through social media in the Egyptian context, making it a calling need rather than just an interesting point to tackle.

## 2. Literature Review

Knowledge sharing refers to interpersonal interactions that involve communicating and receiving knowledge from others (Sergeeva and Andreeva, 2015) which contain both the tacit knowledge, as well as explicit knowledge (Collins, 2010). Tacit knowledge resides in the minds of people, which can be expressed through thoughts and perceptions. On the other hand, explicit knowledge is systematic knowledge often in written form such as books, documents and reports (Virtanen, 2013). Unlike tacit knowledge, explicit knowledge is easily retrieved and communicated in organizations. Thus, can easily be codified, stored and transferred (Manus, 2016).

Knowledge can be shared using a variety of routes, media, methods and techniques. However, since people are the main players in knowledge sharing, individual behaviour is a critical factor. Thus, knowledge sharing cannot be easily guaranteed. Many studies (Islam and Khan, 2014; Noor and Salem, 2011; Wabwezi, 2011) have developed models and frameworks to explain the factors affecting knowledge sharing in or-

ganizations. Yet, sharing knowledge in the Egyptian context still lacks investigation; especially with social media's role being explored.

## **2.1 Factors Affecting Knowledge Sharing**

Numerous researches (Mueller, 2014 ; Hasanzadeh et al., 2014; Abdul Razak and Latip, 2016; Razmerita, et al., 2016 ; Jafari, et al., 2015) investigated the factors that motivate individuals to share knowledge in organizations. Factors affecting knowledge sharing could be classified into individual/human factors, organisational factors, and technological factors. While the individual/human factors mainly involve information needs, mutual relationship, behavioural pattern, cooperative efforts and reliability, organizational factors involve qualifications, motivation, communication, and commitment. On the other hand, technological factors refer to the increased use of ICTs, and access to websites (Islam and Khan, 2014). From a different perspective, factors affecting knowledge sharing could be divided into technical and non-technical factors. Technical factors mainly refer to technology-related aspects, while non-technical factors are related to individual, organizational culture, and organizational structure (Noor and Salem, 2011).

Other investigations identified a variety of factors. For example, Wabwezi (2011) emphasised the role of organizational structure, organization processes and culture in promoting knowledge sharing. Hasanzadeh et al. (2014) have highlighted the fact that experience, education, intrinsic motivation, workplace, and management support are the main factors that control employees' behaviour towards knowledge sharing. In the same year, Mueller has investigated the

cultural factors and their impact on knowledge sharing. Time, structure, and openness were found to have positive effects on knowledge sharing (Mueller, 2014). Self-worth and organizational climate were also identified as the most important factors influencing knowledge sharing in a study by Abdul Razak and Latip (2016), and another by Jafari, et al. (2015). In the same route, Razmerita, et al. (2016) and Jafari, et al., (2015) reported that rewards and management support were the top recognizable factors in motivating knowledge sharing.

On the other hand, a number of studies investigated the significant barriers to knowledge sharing in organizations. The main challenges identified were the change of behaviour, lack of trust, time (Razmerita et al., 2016), unwillingness to learn, over-criticism and abuse of knowledge (Ogunsola and Lasode, 2017). In public sector universities; uncooperative culture, lack of rewards and neglecting individual's emotions (Akgünet et al., 2017; Olaniran, 2017) were found to have a negative impact on knowledge sharing practices. Similarly, Muqadas et al. (2017) discovered that sharing knowledge to in order to be favoured by top management in an attempt to gain power, authority, influence and promotion opportunities negatively affect knowledge sharing practices.

## **2.2 knowledge Sharing through Social Media**

The Internet technologies capabilities available nowadays encourages the dissemination and use of knowledge in organizations. The utilization of social media offers several opportunities for knowledge sharing in the workplace: problem solving between peers through communication, alteration of personal

knowledge to organisational knowledge and discussion of work problems Gaál et al. (2015). Similarly, Sigalaa and Chalkiti (2015) highlighted that the utilization of social media for expressing, distributing, discussing, combining and creating information with peers within various social networks can activate, enrich and expand the employees' individual intellectual abilities and provide them with incentives for generating and creating ideas and knowledge.

Since human interactions are the primary sources of knowledge transfer (Sergeeva and Andreeva, 2015), authors have investigated the factors encouraging the use of social media in the workplace for sharing knowledge (Gaa et al., 2015; Sigalaa and Chalkiti, 2015; Hartono and Sheng, 2016). History, outcome expectations, perceived organizational support and trust were the main factors identified by Paroutis and Saleh (2009) for knowledge sharing and collaboration using Web 2.0 technologies. Public sharing of information and content evaluation amongst peers were on top of the list as stated by Dumbrell and Steele (2014). Behringer and Sassenberg (2015) highlighted that the intention to apply social media for knowledge is affected by the importance, deficits and usefulness of social media for knowledge exchange and experience in social media use.

Social networks abilities is the key to enhance knowledge sharing performance in organizations that determine the future of firms (Hartono and Sheng, 2016). Based on the results of the study by Barhoumi (2015), Web 2.0 technologies such as WhatsApp is a good tool for learning in blended course approach. WhatsApp is preferred over faceto-face interaction due to facilitation of

online discussions and collaboration regardless place and time factors. Accordingly, Cleveland (2016) identified seven main features impacting knowledge creation within organizations. These features are namely; generality, briefness, knowledge source profile, subscription, reposting, directed communication and tagging.

On the other hand, Razmerita et al. (2016) proposed a set of factors that need to be considered by management to increase social media use at the work place. Their framework highlighted motivational factors (organizational and individual) which encourage employees to share knowledge in organizations. The research discovered that helping others is the key factor that influence knowledge workers to share knowledge.

### **2.3 Knowledge Sharing in Egypt**

With the penetration of mobile digital platform and availability of an affordable Internet connection and suitable bandwidth, social media has been widely used in the Egyptian society. Many internet users are young people, the majority of whom have integrated social networking sites in their daily life activities. It is believed that social media sites, such as Facebook and Twitter strongly contributed and facilitated major changes in Egypt as the Egyptian revolution in 2011 (Mauru-shat et al., 2014).

According to the Digital In (2017) Global Overview, it is estimated that of the almost 100 million people of the population, Egypt has 37% Internet penetration. Egyptians spend an average of 4 hours online daily on their laptops/desktops, and around 3 hours on their mobiles. Social media penetration in

Egypt is also about 37%, and users spend around 3 hours a day on Social media. Despite the fact that Egyptian citizens normally lead a very busy life, and may not have enough time to play the variety of roles that they are entitled every day, yet they seem to have time for surfing the internet and using social media e-transactions in particular. Accordingly, the above numbers are clear indicators that social media may have a great impact on the Egyptian society. Not to mention the 25% annual growth rate in Egyptian social media users, with around 14 million Facebook users in Egypt almost 50% of which being active on a daily basis, and with a mobile social penetration reaching almost 33%. Egyptians use the internet primarily to interact with others. Nearly half of Egyptians (46%) use direct messaging such as Whatsapp, among those few using group chats. In Egypt, Whatsapp is still the dominant messaging app and Facebook messenger as second popular in Egypt (Jozi, 2016). Other activities have also been reported, such as online training, online degrees and accreditation (Dennis, et al., 2017).

Although the benefits of utilising social networks in organizations are notable, the term knowledge sharing is relatively new and uncommonly heard to the firms and organizations in Egypt. Regarding knowledge as one of the factors that is critical to ensure the success of an organization, is not yet fully realised and perceived by organizations (El Saghier et al., 2015), despite the obvious penetration and use of social media in the Egyptian society. Egypt has quarter of Arab world's Facebook users , yet its penetration lies only at 16.17% of its population, making it the 12th most penetrated country in the region.

Qatar has a Facebook penetration of 78.66 %, followed by the United Arab Emirates at 67.75% (Hussein, s2013).

Few studies were conducted in the Egyptian context that tackled the factors encouraging knowledge sharing in organizations. El Badawy and Magdy (2015) listed three main factors; organizational culture, perceptions of organizational commitment and employees' perceptions of intrinsic and extrinsic motivation as important factors to implementing KM systems. In the same context, Elfar et al. (2017) recommended that management encouragement, the presence of a reward system, rotation of employees between different business units might lead to a better application of the knowledge management system. Likewise, Shaarawy and Abdelghaffar (2017) highlighted that the technological factors like knowledge integration, and knowledge transformation and confidentiality affects only the knowledge shared.

To sum up, further research to study the factors influencing knowledge sharing through social media in the Egyptian context is considered a calling need. Accordingly, the current research is based on comparing the knowledge sharing model shown below in figure 1 between Whatsapp and Facebook users, as they are the two most popular social media currently used in the (AAST-MT). Therefore, the research hypotheses shown below had been figured out on two stages, the first for the Whatsapp and the second for Facebook groups. The research hypotheses are stated as follows:

**H<sub>1</sub>: There is a significant impact of the KS antecedents on Knowledge Sharing.**

**H<sub>1.a</sub>:** There is a significant impact of the KS antecedents on Knowledge Sharing using Whatsapp.

**H<sub>1.b</sub>:** There is a significant impact of the KS antecedents on Knowledge Sharing using Facebook.

**H<sub>2</sub>:** There is a significant impact of social media usage on Knowledge Sharing.

**H<sub>2.a</sub>:** There is a significant impact of social media usage on Knowledge Sharing using Whatsapp.

**H<sub>2.b</sub>:** There is a significant impact of social media usage on Knowledge Sharing using Facebook.

**H<sub>3</sub>:** Social Media Usage mediates the relationship between Knowledge Sharing and its antecedents.

**H<sub>3.a</sub>:** Social Media Usage mediates the relationship between Knowledge Sharing and its antecedents using Whatsapp.

**H<sub>3.b</sub>:** Social Media Usage mediates the relationship between Knowledge Sharing and its antecedents using Facebook.

**H<sub>4</sub>:** There is a significant difference in Knowledge Sharing and its antecedents between undergraduates

**H<sub>4.a</sub>:** There is a significant difference in Knowledge Sharing and its antecedents between undergraduates and postgraduates using Whatsapp.

**H<sub>4.b</sub>:** There is a significant difference in Knowledge Sharing and its antecedents between undergraduates and postgraduates using Facebook.

**H<sub>5</sub>:** There is a significant difference in Knowledge Sharing and its antecedents using Whatsapp versus Facebook groups.

### 3. Research Methodology

The current research proposed a model for knowledge sharing (KS) for both types of social media; Whatsapp and Facebook, as illustrated in figure 1. The model contains Technology, Organization culture, Personality, Time, Management Support, and organization structure as antecedents of knowledge sharing happening through social media, as had been hypothesized from literature review. A mediator is introduced, which is the social media used, referring to the frequency of using social media and how this might impact the relationship between Knowledge Sharing and its antecedents.

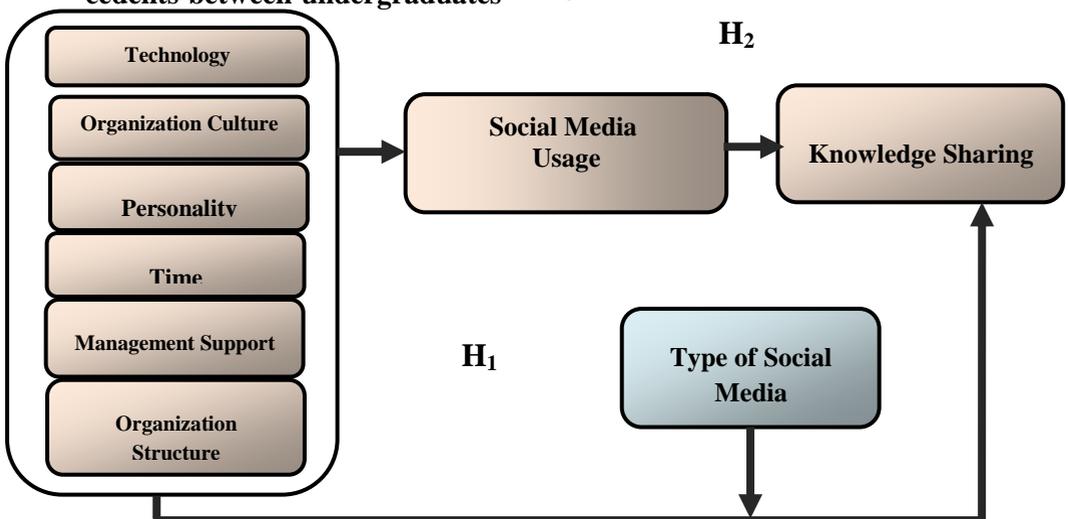


Figure1 Research Model (Designed and Developed by the researchers)

### 3.1. Research Design

In this study, items used to operationalize the constructs were mainly adapted from previous studies of Lin (2007), Tohidinia and Mosakhani (2010), Eze et al. (2013), and Youssef et al. (2017), and then modified for use in the knowledge-sharing context. All constructs were measured using four items for each construct. The current study used the questionnaire, as shown in Appendix, to collect data from the CMT and PQI faculties of the AAST-MT University. The selection of the AASTMT had been based on the fact that it is a unique private university in Egypt, as it is ranked number 13 on the Egyptian university ranking, ranked number 2 as a non-governmental university, and the 1<sup>st</sup> non-profitable institution on the (Ranking Web of Universities, 2017).

To include various types of students, the College of Maritime Transport (CMT) and the Productivity and Quality Institution (PQI) had been selected to represent the undergraduate and post-graduate students respectively. Therefore, the research model will be conducted two times for the AASTMT members of both faculties, one time for each type of social media, to test the above mentioned hypotheses. A total number of 239 students had been included in testing the research model, representing 144 active members of social net-

work groups from CMT and 95 active members of PQI. The total members respond to the questionnaire of the current study two times; one time for the Whatsapp group and another time for the Facebook group.

A five-point Likert scale is used to capture the level of agreement with each statement. Data was entered and analyzed using SPSS to compute the reliability, validity, descriptive statistics and testing the research hypotheses using regression analysis.

### 4. Hypotheses Testing

This section illustrates the results obtained from the data analysis for the purpose of testing the research hypotheses. Descriptive statistics, regression analysis and T-test are demonstrated in this section.

#### 4.1 Descriptive Statistics of Study Variables

Tables 1 below show the mean, standard deviation and frequencies of the research variables using both; Whatsapp and Facebook respectively. It could be observed that all of the means were above the midpoint of the scale (5-point likert scale). This indicates the fact that the research variables were recognized in the Knowledge Sharing model proposed for Faculties Staff.

**Table 1. Descriptive Statistics and Frequencies for Variables using Social Media Groups**

Type of Social Media	Variable	Mean	SD	Frequencies				
				1	2	3	4	5
<b>Table 1.1 Descriptive Statistics and Frequencies for Variables using Whatsapp</b>								
<b>Whatsapp</b>	Technology	2.828	0.378	0	41	198	0	0
	Organization Culture	3.506	0.750	0	12	119	83	25
	Personality	3.134	0.738	0	51	105	83	0
	Time	4.042	0.660	0	0	47	135	57
	Management Support	3.594	0.600	0	9	84	141	5
	Organization Structure	3.427	0.752	0	21	112	89	17
	Knowledge Sharing	3.987	0.677	0	2	50	136	51
	Social Media Used	3.728	0.737	0	8	82	116	33
<b>Table 1.2 Descriptive Statistics and Frequencies for Variables using Facebook</b>								
<b>Facebook</b>	Technology	3.904	0.618	0	0	52	152	33
	Organization Culture	3.782	0.774	0	4	91	97	47
	Personality	3.749	0.753	0	15	60	134	30
	Time	3.159	0.635	0	32	137	70	0
	Management Support	3.192	0.562	0	19	155	65	0
	Organization Structure	3.448	0.658	0	8	130	87	14
	Knowledge Sharing	4.109	0.562	0	0	26	161	52
	Social Media Used	3.719	0.751	0	5	95	101	38

### 4.1.1 Reliability and Validity Analysis

Table 2 shows the reliability and validity analysis for research variables using both; Whatsapp and Facebook. The cronbach's alpha is computed for testing reliability, where all values are shown to be greater than 0.7, which is

an acceptable level for reliability. Also, the average variance extracted (AVE) and factor loadings (FL) are computed, where it could be observed that all AVEs are greater than 50% and all FLs are greater than 0.4.

**Table 2. Reliability and Validity Analysis for Variables using Social Media Groups**

Variable	Items	Whatsapp Group			Facebook Group		
		Cronbach's Alpha	AVE	FL	Cronbach's Alpha	AVE	FL
Technology	Item 1	0.728	58.464	0.749	0.879	74.150	0.888
	Item 2			0.407			0.574
	Item 3			0.491			0.888
	Item 4			0.692			0.616
Organization Culture	Item 1	0.864	71.176	0.690	0.874	72.983	0.937
	Item 2			0.806			0.937
	Item 3			0.821			0.644
	Item 4			0.530			0.401
Personality	Item 1	0.868	73.060	0.908	0.887	75.460	0.597
	Item 2			0.915			0.914
	Item 3			0.665			0.914
	Item 4			0.435			0.592
Time	Item 1	0.916	63.496	0.503	0.923	84.894	0.971
	Item 2			0.919			0.481
	Item 3			0.877			0.971
	Item 4			0.961			0.971
Management Support	Item 1	0.904	78.108	0.831	0.899	76.832	0.603
	Item 2			0.798			0.785
	Item 3			0.747			0.835
	Item 4			0.748			0.851
Organization Structure	Item 1	0.875	73.847	0.909	0.886	74.614	0.838
	Item 2			0.635			0.834
	Item 3			0.911			0.720
	Item 4			0.499			0.592
Knowledge Sharing	Item 1	0.915	80.438	0.932	0.890	78.187	0.948
	Item 2			0.932			0.482
	Item 3			0.712			0.939
	Item 4			0.640			0.759

Tables 3 shows the discriminant validity for the research variables of both social networks groups of Whatsapp and Facebook. The diagonal values represent the square root of the average variance extracted of the corresponding variables, while the off diagonal values are the correlations between the corre-

sponding variables. It could be observed that all square root of AVEs are greater than the correlations between the corresponding construct and all other variables, which proves the discriminant validity of all the research variables.

**Table 3. Discriminant Validity for Variables using Whatsapp and Facebook Groups**

**Table 3. Panel A: Discriminant Validity for Variables using Whatsapp Groups**

	1	2	3	4	5	6	7
Technology	(0.746)						
OC	.427**	(0.844)					
Personality	.444**	.500**	(0.855)				
Time	.484**	.705**	.566**	(0.797)			
MS	.452**	.375**	.503**	.616**	(0.884)		
OS	.303**	.562**	.457**	.726**	.470**	(0.859)	
KS	.550**	.717**	.626**	.814**	.681**	.738**	(0.897)

**Table 3. Panel B: Discriminant Validity for Variables using Facebook Groups**

	1	2	3	4	5	6	7
Technology	(.861)						
OC	.580**	(0.854)					
Personality	.562**	.497**	(0.869)				
Time	.575**	.566**	.462**	(0.921)			
MS	.550**	.502**	.512**	.620**	(0.877)		
OS	.489**	.489**	.296**	.301**	.391**	(0.864)	
KS	.769**	.702**	.621**	.705**	.692**	.549**	(0.884)

**4.2 Regression Analysis for Direct Relations of KS using Social Media**

Data analysis in this study was performed using regression analysis after validating the regression assumptions of normality, multicollinearity, autocorrelation, linearity and homoscedasticity. Table 4 shows the regression analysis results for the Knowledge Sharing Model, where it was found that there is a significant positive impact of all the re-

search variables; Technology, Organization Culture, Personality, Time, Management Support and organization structure on Knowledge Sharing, as all P-values are less than 0.05. Also, the standardized estimates show that the research variables could be ranked according to their importance to Knowledge Sharing through Whatsapp as Time, Management Support, Organization Structure, Organization Culture, Technology and Personality, as standardized coefficients are 0.549, 0.156, 0.138,

0.119, 0.089, and 0.075 respectively. In addition, it could be noticed that R-Squared is 0.890, which means the model explains 89% of the variation in the Knowledge Sharing through Whatsapp group.

**Table 4. Regression Analysis for Direct Relations of KS using Whatsapp Groups**

	Unstandardized Coefficients		Standardized Coefficients	t	P-value
	B	Std. Error	Beta		
(Constant)	-.385-	.122		-3.152-	.002
Technology	.159	.047	.089	3.353	.001
Organization Culture	.107	.029	.119	3.717	.000
Personality	.069	.026	.075	2.656	.008
Time	.564	.043	.549	13.031	.000
Management Support	.175	.033	.156	5.296	.000
Organization Structure	.124	.029	.138	4.284	.000

Therefore, the first hypothesis H<sub>1.a</sub> is fully supported for the Whatsapp group.

As for the Facebook group, table 5 shows the regression analysis results for the Knowledge Sharing Model, where it was found that there is a significant positive impact of all the research variables; Technology, Organization Culture, Personality, Time, Management Support and organization structure on Knowledge Sharing, as all P-values are less than 0.05. Also, the standardized estimates show that the research variables could be ranked according to their

importance to Knowledge Sharing through Whatsapp as Technology, Time, Organization Culture, Management Support, Organization Structure, and Personality, as standardized coefficients are 0.298, 0.216, 0.183, 0.182, 0.140, and 0.128 respectively. In addition, it could be noticed that R-Squared is 0.792 which means that the model explains around 79% of the variation in the Knowledge Sharing through Facebook group.

**Table 5. Regression Analysis for Direct Relations of KS using Facebook Groups**

	Unstandardized Coefficients		Standardized Coefficients	t	P-value
	B	Std. Error	Beta		
(Constant)	.593	.123		4.815	.000
Technology	.271	.040	.298	6.763	.000
Organization Culture	.133	.030	.183	4.360	.000
Personality	.096	.029	.128	3.316	.001
Time	.191	.038	.216	5.040	.000
Management Support	.182	.042	.182	4.343	.000
Organization Structure	.120	.031	.140	3.849	.000

Therefore, the first hypothesis H<sub>1.b</sub> was fully supported for the Facebook Model.

**4.3 Regression Analysis for Direct Relations of KS using Social Media**

Table 6 shows the regression analysis results for the impact of Social Media usage on Knowledge Sharing using

Whatsapp group, where it was found that there is a significant positive impact of Social Media Usage on Know-ledge Sharing, with coefficient of 0.744 and P-value of 0.000, less than 0.05.

**Table 6. Regression Analysis for Direct Relations of KS using Whatsapp Group**

	Unstandardized Coefficients		Standardized Coefficients	
	B	Std. Error	Beta	t P-value
(Constant)	1.215	.133		9.148 .000
Organization Structure	.744	.035	.810	21.284 .000

Therefore, the second hypothesis H2.a was supported, suggesting that the Social Media Usage significantly affected Knowledge Sharing using Whatsapp.

Regarding the Facebook model of social media usage impact, it wis shown shown in table 7, that there is a significant positive impact of Social Media Usage on Knowledge Sharing, with coefficient of 0.568 and P-value of 0.000, less than 0.05.

**Table 7. Regression Analysis for Direct Relations of KS using Facebook Groups**

	Unstandardized Coefficients		Standardized Coefficients	
	B	Std. Error	Beta	t P-value
(Constant)				16 .6 .000
Organization Structure	.568	.032	.760	23 17 .9 .000 74

Therefore, the second hypothesis H<sub>2,b</sub> was supported, suggesting that the Social Media Usage significantly affected Knowledge Sharing using Facebook.

**4.4 Mediation Role of Social Media Usage between KS and its Antecedents**

Table 8 shows the regression analysis results for the Knowledge Sharing Model including Social Media Usage as a mediator, where it was found that there is a full mediation of Social Media Usage between Organization Cul-

ture and Personality and Knowledge Sharing, as P-values are 0.060 and 0.123 respectively (>0.05). On the other hand, there is a partial mediation of Social Media Usage between Technology, Time, Management Support and Organization Structure and Knowledge Sharing, as all P-values are less than 0.05.

**Table 8. Regression Analysis for Social Media Usage Mediation Role in KS using Whatsapp**

	Un standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	P-value
(Constant)	-.382-	.114		-3.350-	.001
Technology	.155	.044	.087	3.508	.001
Organization Culture	.054	.028	.060	1.892	.060
Personality	.038	.025	.042	1.547	.123
Time	.491	.042	.479	11.614	.000
Management Support	.155	.031	.137	4.971	.000
Organization Structure	.116	.027	.129	4.275	.000
Social Media Usage	.183	.031	.200	5.854	.000

Therefore, hypothesis H<sub>3,a</sub> was supported, suggesting a mediation role of Social Media Usage using Whatsapp between KS and its antecedents.

Table 9 shows the regression analysis results for the Knowledge Sharing Model using Facebook including Social Media Usage as a mediator, where it was found that there is a full mediation of Social Media Usage between all the

research variables; Technology, Organization Culture, Personality, Time, Management Support and Organization Structure and Knowledge Sharing, as all P-values are less than 0.05.

**Table 9. Regression Analysis for Social Media Usage Mediation Role in KS using Facebook**

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	P-value
(Constant)	.626	.120		5.209	.000
Technology	.267	.039	.294	6.848	.000
Organization Culture	.097	.031	.134	3.124	.002
Personality	.081	.028	.109	2.855	.005
Time	.139	.039	.157	3.520	.001
Management Support	.144	.042	.144	3.428	.001
Organization Structure	.104	.031	.122	3.407	.001
Social Media Usage	.137	.037	.183	3.718	.000

Therefore, hypothesis H<sub>3,b</sub> was supported, suggesting a partial mediation role of social media usage using Facebook.

### 4.5 Comparing KS and its antecedents between undergraduates and postgraduates

Testing the difference in the research variables using Whatsapp between postgraduates and undergraduates, an independent samples t-test had been conducted as shown in table 10, where it

was proved that there is a significant difference in the research variables; Organization Culture and Personality between undergraduates and postgraduates. Also, it could be noticed that the mean Organization Culture of postgraduates (3.3789) is lower than that of undergraduates (3.5903). Similarly, the mean personality of postgraduates (2.9158) is lower than that of the undergraduates (3.2778).

**Table 10. T-test of difference between Undergraduates and Postgraduates using Whatsapp**

	Groups	N	Mean	Std. Deviation	P-value
<b>Technology</b>	Postgraduate	95	2.8105	.39396	0.552
	Undergraduate	144	2.8403	.36763	
<b>Organization Culture</b>	Postgraduate	95	3.3789	.60457	0.033
	Undergraduate	144	3.5903	.82287	
<b>Personality</b>	Postgraduate	95	2.9158	.66305	0.000
	Undergraduate	144	3.2778	.75210	
<b>Time</b>	Postgraduate	95	3.9895	.55534	0.320
	Undergraduate	144	4.0764	.72014	
<b>Management Support</b>	Postgraduate	95	3.5895	.64404	0.922
	Undergraduate	144	3.5972	.57109	
<b>Organization Structure</b>	Postgraduate	95	3.4316	.64664	0.936
	Undergraduate	144	3.4236	.81575	
<b>Knowledge Sharing</b>	Postgraduate	95	3.9263	.58786	0.257
	Undergraduate	144	4.0278	.72849	

Therefore, hypothesis H<sub>4.a</sub> was partially supported, suggesting a significant difference in Organization Culture and Personality using Whatsapp.

Table 11, shows testing the difference in the research variables using Facebook group between postgraduates and undergraduates, an independent samples t-test had been conducted, where it was proved that there is a significant difference in the research variables; Organization Culture and Knowledge

Sharing between undergraduates and postgraduates. Also, it could be noticed that the mean Organization Culture of postgraduates (3.4842) is lower than that of undergraduates (3.9792). Similarly, the mean Knowledge Sharing of postgraduates (4.0105) is lower than that of the undergraduates (4.1736).

**Table 11. T-test of the difference between Undergraduates vs. Postgraduates using Facebook**

	Groups	N	Mean	Std. Deviation	P-value
<b>Technology</b>	Postgraduate	95	3.9368	.47959	0.502
	Undergraduate	144	3.8819	.69460	
<b>Organization Culture</b>	Postgraduate	95	3.4842	.65009	0.000
	Undergraduate	144	3.9792	.78863	
<b>Personality</b>	Postgraduate	95	3.7579	.66390	0.882
	Undergraduate	144	3.7431	.80858	
<b>Time</b>	Postgraduate	95	3.1579	.58919	0.983
	Undergraduate	144	3.1597	.66546	
<b>Management Support</b>	Postgraduate	95	3.1684	.51885	0.592
	Undergraduate	144	3.2083	.58983	
<b>Organization Structure</b>	Postgraduate	95	3.3579	.56334	0.087
	Undergraduate	144	3.5069	.70954	
<b>Knowledge Sharing</b>	Postgraduate	95	4.0105	.47254	0.028
	Undergraduate	144	4.1736	.60684	

Therefore, hypothesis H<sub>4,b</sub> was partially supported, suggesting a significant difference in Organization Culture and Knowledge Sharing using Facebook.

#### **4.6 Comparing KS and its antecedents between Whatsapp and Facebook Groups**

Reporting the difference in the research variables between Whatsapp and Facebook groups, an independent samples t-test had been conducted as shown in table 12, where it was proved that th-

ere is a significant difference in the all the research variables (except Organization Structure). Also, it could be noticed that the mean Technology, Organization Culture, Personality, and Knowledge Sharing are greater in Facebook than in Whatsapp. On the other hand, the mean Time and Management Support of postgraduates is higher than those of the undergraduates.

**Table 12. T-test of the difference between Whatsapp and Facebook Groups**

	Groups	N	Mean	Std. Deviation	P-value
<b>Technology</b>	Whatsapp	239	2.8285	.37778	0.000
	Facebook	239	3.9038	.61762	
<b>Organization Culture</b>	Whatsapp	239	3.5063	.74962	0.000
	Facebook	239	3.7824	.77429	
<b>Personality</b>	Whatsapp	239	3.1339	.73826	0.000
	Facebook	239	3.7490	.75297	
<b>Time</b>	Whatsapp	239	4.0418	.65971	0.000
	Facebook	239	3.1590	.63497	
<b>Management Support</b>	Whatsapp	239	3.5941	.59983	0.000
	Facebook	239	3.1925	.56191	
<b>Organization Structure</b>	Whatsapp	239	3.4268	.75166	0.746
	Facebook	239	3.4477	.65816	
<b>Knowledge Sharing</b>	Whatsapp	239	3.9874	.67663	0.033
	Facebook	239	4.1088	.56200	

Therefore, hypothesis H<sub>5</sub> was partially supported, suggesting a significant difference in all research variables (except Organization Structure) according to the social media group used (Whatsapp versus Facebook).

#### 4. Discussion

The above results present several findings for the current research regarding knowledge sharing using social media networking groups. One main finding is that the knowledge sharing antecedents include Technology, Organization Culture, Personality, Time, Management Support, and Organization Structure, as all such antecedents show a positive significant impact on Knowledge Sharing (P-values <0.05) in both models of Whatsapp and Facebook. Also, it was found that the R-squared of the Knowledge Sharing model using Whatsapp group is 89%, and that using Facebook group is 79%, which are relatively large percentages showing a high con-

tribution of the research variables; Technology, Organization Culture, Personality, Time, Management Support, and Organization Structure, in explaining the variation in Knowledge Sharing.

Another finding shown by the current research is the significant mediation role of social media usage between Knowledge Sharing and its antecedents. Regarding the model using Whatsapp group, it was found that there is a full mediation of Social Media Usage between Organization Culture and Personality and Knowledge Sharing, while there is a partial mediation of Social Media Usage between Technology, Time, Management Support and Organization Structure and Knowledge Shar-

ing. Considering the model using Facebook, it was found that there is a full mediation of Social Media Usage between all the research variables; Technology, Organization Culture, Personality, Time, Management Support and Organization Structure and Knowledge Sharing.

Comparing postgraduates with undergraduates who use the Whatsapp group, a significant difference was noted in the research variables; Organization Culture and Personality between undergraduates and postgraduates. The higher mean values of both variables in undergraduates than in postgraduates, show higher concern regarding the mentioned variables than the postgraduates, while other variables are shown to be equally important for both; postgraduates and undergraduates. The same comparison for those using the Facebook group, showed a significant difference in the research variables; Organization Culture and Knowledge Sharing between undergraduates and postgraduates. The mean values of both variables were also higher in undergraduates than in postgraduates. This highlights that the culture of the AASTMT, as private university, makes it possible for undergraduates to better share knowledge. This could be referred to as the nature of the undergraduates themselves and their difference from the postgraduates.

Finally, comparing the knowledge sharing model using Whatsapp versus Facebook, it was noticed that there is a significant difference in the research variables; Technology, Organization Culture, Personality, Time, Management Support and Knowledge Sharing between both groups of social media networking. It had been observed as well that the mean values of Technology,

Organization Culture, Personality and Knowledge Sharing are higher using Facebook group than using Whatsapp group. This means that members of Facebook are able to achieve higher knowledge sharing through their Facebook groups as they have better chance of technology as well as better perceived organization culture, which make it easier for them to socialize and show greater interactivity through the Facebook group.

On the other hand, it had been observed that the mean values of Time and Management Support are higher using Whatsapp groups than using Facebook groups. This means that Whatsapp users use their groups to save time in their knowledge sharing process as well as the support that is given from managers through their presence and interaction on the Whatsapp group, rather than the case with Facebook groups.

## 5. Conclusion

The current research proposed a model for knowledge sharing (KS) for both types of social media; Whatsapp and Facebook. The model contained six antecedents of knowledge sharing happening through social media. The type of social media used was introduced as the mediator. The research compared the knowledge sharing model shown between Whatsapp and Facebook users, as they are the two most popular social media currently used in the AASTMT. Results obtained showed that knowledge sharing antecedents include Technology, Organization Culture, Personality, Time, Management support and Organization Structure in both models of Whatsapp and Facebook. The results also proved the significant mediation role of social media usage between KS and its

antecedents. However, differences in mediation of variables between Whatsapp and facebook models were discovered. By comparing postgraduates with undergraduates using Whatsapp group, results revealed that undergraduates show higher concern regarding Organizational Culture and Personality than postgraduates. For those using Facebook group results indicates that the simple and easy culture of the AASTMT facilitates higher knowledge sharing for undergraduates.

Finally, results proved that members of Facebook groups are able to experience higher levels of knowledge sharing as they have better chance of technology usage besides better perceived organizational culture. On the other hand, members of Whatsapp groups try to save time in knowledge sharing and follow instructions given from top managers towards Whatsapp group interaction.

## 6. Limitations and Future Work

Although the current research is considered a thorough investigation that provides a benchmark and a platform for future investigation of antecedents of knowledge sharing in educational institutions using Social Media E-Transactions in Egypt, yet it has a number of limitations, leaving room for future research, some of which are listed below:

- A lack of readily available data on KS using social media studies in Egypt did not permit a more in-depth analysis of possible customer similarities to

and differences from overseas studies. A comparative study across different countries might be significant, showing more similarities and differences, and bringing more cultural aspects to the light.

- The research respondents though selected from both undergraduate and postgraduate units, however the samples were limited to CMT and PQI faculties only. A convenient sample from all faculties in the case study would have given a more inclusive analysis.
- The analysis was more inclined towards the social perspective rather than the technical perspective. A more technical oriented research becomes a natural focus to follow a broader social research, taking into consideration both the study findings and the technological advances.
- Additional factors would be worth identifying and analysis. Further investigation could examine different KS antecedents and possibly more aspects, functions, practices, and details could be incorporated into the model to present a better understanding of the system.
- A longitudinal approach could also be adopted throughout a number of time periods, as social media evolve and educational institutions address some of the technological and interactive factors which contribute to knowledge sharing.
- Finally, studying social media applications other than Whatsapp and Facebook may yield different results. other social media applications.

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Statements	Scale				
11. My knowledge sharing would improve the work process in the university					
12. My knowledge sharing would increase productively in the university					
13. I enjoy sharing my knowledge with colleagues					
14. I enjoy helping colleagues by sharing my knowledge					
15. I am confident in my ability to provide knowledge that others consider valuable					
16. To me, knowledge sharing with other organizational members is pleasant					
17. Managers think that encouraging knowledge sharing with colleagues is beneficial					
18. Managers always support and encourage employees to share their knowledge with colleagues					
19. Managers provide most of the necessary help and resources to enable employees to share knowledge					
20. My supervisors encourage subordinates to be creative through taking personal and group initiatives					
21. My university encourages suggesting ideas for new opportunities					
22. My work environment encourages self-reinforcement so that members of a team recognize and emphasize on effective performance					
23. My work environment has high self-expectation on personal and group performance					
24. Our work environment enhances confidence among employees to foster effective knowledge sharing					
25. Communication with other departments occurs through prescribed channels					
26. I can generally get the resources I need to share knowledge in my department/ university					
27. In my organization the employees are constantly being checked for rules violation					
28. My university structure of divisions promotes interaction and sharing knowledge across organizations boundaries					