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The moderating impact of work cooperation within the ministry of social affairs and labour in Kuwait: an approach based on TAM and D&M models

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Abstract: This study is based on the technology acceptance model (TAM) and information system success model (D&M) with the goal of examining the performance of Kuwaiti employees utilising the Electronic Document and Records Management System (EDRMS) in Kuwait's Ministry of Social Affairs and Labor (MOSAL). This study aims to examine employees' performance using EDRMS in MOSAL and proposes the moderating effect of work cooperation on employee performance. Data belonging to 345 employees were collected from MOSAL. SmartPLS was utilised to analyse the obtained data. The results indicate that perceived ease of use and perceived usefulness have a positive influence on employee performance. However, the findings fail to support the relationship between system usage and user satisfaction. Additionally, this study reveals that work cooperation moderate the positive relationship between system usage and employees' performance. The study contributed understands factors affecting the performance of employees using EDRMS in MOSAL. Limitations of the study were explained, and suggestions of future research were also presented.

Keywords: perceived usefulness; ease of use; system usage; user satisfaction; work cooperation; employee performance.

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1 Introduction

Public sectors usually perform a manual processing for their records which can lead the information to be changed or damaged (Mukred and Yusof, 2020). To avoid the change or the damage of information, many organisations tend to use the Electronic Document and Records Management System (EDRMS). It is an electronic system used to maintain organisations documents and records in a way that help organisations to retrieve the necessary information quickly without any lose (Hawash et al., 2021). Moreover, it is utilised by governments to improve the performance of employees. In 2011, the Ministry of Social Affairs and Labor (MOSAL) in Kuwait began to develop its own EDRMS which was called the Data Automated Workflow (DAW) with the goal of automating all documents in the ministry (KUNA, 2011). The DAW was designed in a collaboration

with the Central Agency for Information Technology (CAIT) to manage and process all internal documents electronically and to enable the storage, management, and retrieval of documents by employees more easily.

In 2018, MOSAL completed the EDRMS (DAW) project (Shabban, 2018). However, the completed DAW does not help in improving employee performance. For instance, in 2018, the Global Competitiveness Report demonstrated that out of 137 countries, Kuwait ranked 119 and 68 regarding to the labour efficiency index and the Technology Readiness Index respectively (World Economic Forum, 2018). Furthermore, there exists only a limited number of studies connected to EDRMS and, in spite of its benefits, the successful adoption rate of EDRMS is low in public sectors (Ab Aziz et al., 2017; Mukred et al., 2019b). Furthermore, the literature showed that individuals working in public sectors in developing countries are still suffering in adopting an appropriate EDRMS (Luyombya, 2018). Thus, this study examines the performance of Kuwaiti employees using DAW in MOSAL.

2 Literature review

Davis (1989) developed the technology acceptance model (TAM) and it has been accepted and empirically validated by numerous studies as an accurate predictor of system usage and acceptance. Moreover, it has been widely applied to predict the usage of different types of technology such as small-medium enterprises (SMEs) technology acceptance, e-learning, ERP systems, mobile payment, and EDRMS (Pool et al., 2017; Althunibat et al., 2019; Mukred et al., 2019a; Shahin and Mahyari, 2019; Castiblanco Jimenez et al., 2021).

Despite the broad use of the TAM model in predicting the usage of technology, this model neglects to focus in evaluating the outcomes of technology usage, namely user satisfaction and performance. On this subject, Montesdioca and Maçada (2015) highly recommended user satisfaction and performance as constructs to be employed in measuring the success of information systems. Moreover, a number of studies related to technology adoption have examined the effect of technology usage on individual performance and this relationship needs to be subject of further investigation (Hou, 2012; Son et al., 2012). Furthermore, prior theories and models have not considered work cooperation as a human factor affecting the performance of individuals in public organisations (Pitafi et al., 2018). Work cooperation refers to the level of direct interactions between employees that result in positive outcomes for the organisation (Lu and Hallinger, 2018). It is considered to be a vital factor in the enhancement of team members' performance in public organisations (Zhuge, 2003).

2.1 Perceived ease of use

It has been revealed by several studies that perceived ease of use (PEOU) plays an important role in technology adoption (Kucukusta et al., 2015; Ozturk et al., 2016; De Leon, 2019). Davis (1989) defined PEOU as the extent to which individuals deem the utilisation of a specific system to be effort-free. Also, according to Koksalmis and Damar (2019), higher PEOU of a mandatory system can lead to higher perceived usefulness (PU). Additionally, PEOU has the potential to positively influence PU in the context of e-governments (Gefen et al., 2002). In an extremely limited number of previous studies, no

significant positive impact of PEOU has been discovered on PU (Lee and Lehto, 2013). However, the majority of past studies have shown that PEOU has a positive influence on PU (Ha and Stoel, 2009; Lee et al., 2011; Bhatiasevi and Yoopetch, 2015). As such, the following hypothesis can be formulated:

H1 PEOU has a positive significant impact on PU.

Several studies have been conducted on the impact of PEOU on actual system usage. In the context of technology adoption, Lee and Kim (2009) concluded that PEOU does not influence actual usage. However, other scholars indicated a positive relationship between PEOU and technology usage (Mutahar et al., 2018; Arpaci et al., 2020). Following the majority, the following hypothesis is proposed:

H2 PEOU has a positive significant influence on actual usage.

It has been demonstrated in a study of Venkatesh et al. (2011) that PEOU has no significant impact on user satisfaction. However, in the context of information technology usage, Hong et al. (2006) asserted that PEOU has a significant positive impact on user satisfaction. Furthermore, it has been claimed by Isaac et al. (2018), that PEOU can be a predictor of user satisfaction. In addition, research carried out by Andarwati et al. (2019), illustrates a positive impact of PEOU on user satisfaction in the context of e-government. This indicates that higher PEOU can lead to higher satisfaction. Therefore, the following hypothesis can be given:

H3 PEOU has a positive significant influence on user satisfaction.

2.2 Perceived usefulness

PU is considered to be an essential factor positively related to technology adoption (Mac Callum and Jeffrey, 2013; Negahban and Chung, 2014; Alrajawy et al., 2018). Davis (1989) defined the PU as the extent to which an individual believes that using a specific system can improve his or her performance. In the context of technology adoption, Jahmani et al. (2018) discovered that PU has a positive impact on system usage. Moreover, it has been discovered by other scholars that PU is a predictor of actual technology usage (McFarland and Hamilton, 2006; Kripanont, 2007; Norzaidi et al., 2007; Moslehpour et al., 2018). Hence, the following hypothesis can be formulated:

H4 PU has a positive significant effect on actual usage.

In addition, according to a study of Hong et al. (2006) PU does not have a positive influence on user satisfaction. However, the positive influence of PU on user satisfaction has been emphasised by various studies in relevant literature (Barnes and Vidgen, 2014; Kim, 2014; Sun and Mouakket, 2015). In terms of the e-government, Rana and Dwivedi (2015) and Mahande et al. (2019), indicated that PU is a predictor of user satisfaction. Thus, the following hypothesis is developed:

H5 PU has a positive significant effect on user satisfaction.

2.3 DAW use (US)

Actual usage refers to the frequency of technology utilisation (Sharma and Sharma, 2019). Lack of technology usage can lead to low performance and low productivity (Delone and McLean, 1992, 2003; Makokha and Ochieng, 2014). Few studies have investigated the impact of technology usage on performance and small numbers of research filled this gap (Norzaidi et al., 2007; Hou, 2012; Son et al., 2012). As discovered in some studies, actual usage is not a predictor of performance (Cho et al., 2015). However, numerous works of research have asserted the positive influence of actual usage on individual performance (D'Ambra and Wilson, 2004; D'Ambra et al., 2013; Makokha and Ochieng, 2014). Moreover, actual usage has been discovered to possess a positive impact on user satisfaction (Yakubu and Dasuki, 2018). Therefore, it can be hypothesised that:

H6 Actual usage has a positive significant effect on user satisfaction.

H7 Actual usage has a positive significant effect on performance.

2.4 User satisfaction (SAT)

SAT is an essential factor in assessing system usage success (DeLone and McLean, 2003). Furthermore, it is defined as an individual's pleasure or displeasure with current or prior experience in regard to system usage (Bordoloi, 2020). Mohd Daud (2008) discovered that SAT is not a predictor of individual performance. However, a large number of scholars claimed that SAT positively influences individual performance (Fan and Fang, 2006; Wang and Liao, 2008; Son et al., 2012; Makokha and Ochieng, 2014; Hou, 2018). As such, the following hypothesis can be formulated:

H8 SAT has a positive significant effect on performance.

2.5 Work cooperation (CO)

CO has been proposed in a number of empirical studies to have a positive effect on performance (Wageman and Baker, 1997; Zhuge, 2003; Van der Vegt and Van de Vliert, 2005). In the context of technology usage, Staples and Webster (2008) and Wang et al. (2011) discovered that work cooperation improves employee performance through enterprise social media (ESM). The existence of work cooperation is required as it is a key mechanism to aid employees in finding solutions for work-related problems from coworkers (Hsu, 2017). When work cooperation exists among employees, they become encouraged to exchange work-related information which leads to enhancements in their performance (Khaleel et al., 2017). It is asserted by Espey (2018) that employees with high levels of work cooperation are expected to provide necessary information to one another and this leads to improvements in their work performance. In the context of DAW usage in Kuwait, employees depend on each other to complete their work-related tasks and they are required to cooperate with their coworkers to complete their tasks. This indicates that high or low levels of work cooperation can have positive impact on employee performance in Kuwaiti ministries. Therefore, this study introduces work cooperation as a moderating variable in the relationship between DAW usage and employee performance.

H9 With high levels of work cooperation, the positive relationship between DAW usage and employee performance becomes strengthened.

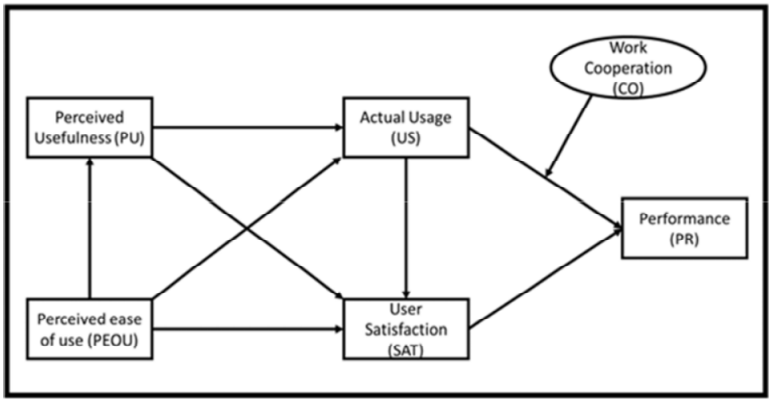
2.6 Employee performance

Employee performance refers to the impact of system usage on users in terms of improving productivity and saving time in performing work -related tasks (Ifinedo, 2007). On this subject, previous studies related to technology have used the intention to use or actual usage as the dependent variable when examining factors affecting the adoption of certain technological systems (Iqbal and Qureshi, 2012; Cheung and Vogel, 2013; Cheng et al., 2015). Moreover, they have disregarded the outcomes of system usage in terms of evaluating the performance of users. In the context of the e-government adoption, studies have demonstrated that evaluating the outcomes of system usage in terms of performance is vital in the measurement of system success in e-government adoption (Zheng et al., 2012; Alenezi et al., 2015; Stefanovic et al., 2016; Yousef, 2017).

3 Overview of the proposed research model

TAM model is a useful model in predicting an individual's usage of information systems and notable studies have applied it to EDRMS adoption (AlShibly, 2014; Lewellen et al., 2014; Lewellen, 2015; Herawan and Sensuse, 2018; Balogun et al., 2019). Also, PU and PEOU in the TAM model are important factors in determining the success of implementation of EDRMS (AlShibly, 2014). However, unlike TAM, there are a few pieces of research examined the outcomes of technology usage such as individual performance (D'Ambra et al., 2013). Also, TAM failed to include user satisfaction as an important factor in information system success, especially in the case of EDRMS usage by employees in public sectors (Yatin et al., 2015; Moghaddasi and Heidari, 2019). The information system success model (D&M) was one of the few models that address the user satisfaction and individual performance as an outcome of technology usage (Aldholay et al., 2018). Pervious literatures showed also inconsistency on the relationship between technology usage and performance (i.e., strong, weak, and no relationship) (Isaac et al., 2017). The insignificant relationship between two connected variables can be strengthened by introducing another variable as a moderator (Baron and Kenny, 1986). Hence, this study will extend TAM model by addressing the link between DAW usage and individual performance among employees within MOSAL. This study will also introduce user satisfaction along with the extended TAM model (i.e.: PU, PEOU, US, SAT, and PR) to determine employee performance in MOSAL. This research also contributes by examining the moderating effect of work cooperation on the relationship between DAW usage and employee performance (refer to 2.5). As such, Figure 1 displays the proposed framework.

Figure 1 Conceptual framework of the study



4 Methodology

In this research, primary data was collected from employees working in MOSAL in Kuwait. This data was obtained from three departments in MOSAL including its administrative, financial, and computer departments, as DAW was used mainly on these departments. Moreover, the researchers contacted all three departments through e-mails, personal visits and telephone and acquired their permissions to perform data collection.

Since the population of the employees (users) working in the aforementioned ministry is unknown, non-probability sampling was utilised and 500 questionnaires were distributed among the corresponding employees on the basis of their willingness to participate in the study. Furthermore, they were informed that results of the survey would be available to them upon request. Hence, from 500 distributed questionnaires, 345 valid responses were returned, resulting in a response rate of 69%.

5 Research instruments

The development of instruments was carefully carried out to reflect the nature of the study. Moreover, the developed questionnaires for this research consisted of 16 items. The variables (PEOU, PU, user satisfaction, employee performance, and work cooperation) were measured using the five-point Likert Scale, with five standing for 'strongly agree' and one set as 'strongly disagree'. In addition, the measurement of system usage took place using the five-point Likert Scale in which the first item (U1) was measured with a five-point Likert scale, including one (once a day), two (several times a day), three (once a week), four (several times a week), and five (once a month). Furthermore, the second item (U2) was also measured with a five-point Likert scale, consisting of one (less than one hour), two (one to two hours), three (three to four hours), four (four to five hours), and five (more than five hours).

Due to the fact that the respondents were Arabic speakers, it was vital for the questionnaire to be precisely translated from English to Arabic. Therefore, a back translation was performed which is a procedure extensively applied to test the precision

of the translation in a cross-cultural survey (Brislin, 1970). Furthermore, the validated instruments shown in Appendix E are adopted from related previous studies to measure the variables of this study.

6 Findings and discussion

The study will demonstrate the demographic information in this section, and it will assess the proposed model in two steps including assessment of the measurement model (outer model) and the assessment of the structural model (inner model) using SmartPLS 3.3. In the measurement model, the study will examine the convergent validity, discriminant validity (Fornell and Larcker Criterion), and Heterotrait-Monotrait ratio (HTMT). In the structural model, (A) assess of the structural model for collinearity issues, (B) assess the significance of the structural model relationships, (C) assess of the structural model for coefficient of determination, (D) assess of the effect size, (E) assess of the predictive relevance, (F) assess of moderation analysis.

6.1 Respondents' profiles

In the demographic information section, respondents in MOSAL were categorised by their age, gender, marital status, level of education, department, and occupation, as displayed in Table 1.

Table 1 Sample characteristics (n = 345)

Items		*Frequency*	*Percentage*
Age	31–40	74	21.4
	41–50	113	32.8
	20–30	101	29.3
	51–55	57	16.5
Gender	Male	179	51.9
	Female	166	48.1
Marital status	Single	141	40.9
	Married	204	59.1
Education	High school	46	13.3
	College	50	14.5
	Bachelor	111	32.2
	Masters	82	23.8
	PhD	56	16.2
Department	Administrative Dep.	200	58.0
	Computer Dep.	64	18.6
	Financial Dep.	81	23.5
Occupation	Employee	241	69.9
	Assistant Manager	59	17.1
	Manager	45	13.0

6.2 Measurement model

The research model of this study was tested using SmartPLS 3.3. In addition, an examination was conducted in regard to the measurement model (validity and reliability of the measures) and the structural model (testing the hypothesised relationships). As a result, work cooperation (CO) and PU scored low values of Cronbach's alpha (0.678 and 0.692 respectively). These values are below the cutoff point for Cronbach's alpha (0.7), as recommended by Hair et al. (2017). Therefore, a form of modification was considered in the second run and, consequently, CO4 and PU3 were deleted in order to achieve satisfactory levels of Cronbach's alpha. Overall, all variables have achieved the cutoff point, as illustrated in Table 2.

Table 2 Convergent validity

	Items	*Factor loading*	*Cronbach's alpha*	*CR*	*Average variance extracted (AVE)*
Work cooperation (*)	CO1	.890	.872	.921	.796
	CO2	.921			
	CO3	.866			
Perceived ease of use	PEOU1	.749	.737	.843	.643
	PEOU2	.898			
	PEOU3	.750			
Employee performance	PR1	.842	.853	.901	.694
	PR2	.843			
	PR3	.824			
	PR4	.823			
User satisfaction	SAT1	.931	.890	.929	.815
	SAT2	.836			
	SAT3	.938			
Actual use	US1	.915	.796	.907	.830
	US2	.907			
Perceived usefulness (*)	PU1	.972	.743	.972	.946
	PU2	.973			

Note: (*) CO4 and PU3 have been deleted due to low Cronbach's alpha

Secondly, the discriminant validity was examined to assess how truly distinct a construct is from other constructs. In the field of distinguishing validity, the correlations between variables in the model did not exceed 0.95 as suggested by Kline (2015). Also, the validity was tested based on measurements of the correlations between constructs and the square root of the average variance derived for a construct (Fornell and Larcker, 1981; Kline, 2015). Hence, Table 3 contains the results of the Fornell and Larcker Criterion and shows no value above the recommended cutoff point of 0.95.

Table 3 Fornell and Larcker criterion

	CO	*PEOU*	*PR*	*PU*	*SAT*	*US*
CO	.892					
PEOU	.003	.802				
PR	.616	.083	.833			
PU	–.025	.581	.023	.973		
SAT	–.056	–.310	–.106	–.279	.903	
US	.570	.092	.612	–.036	–.044	.911

Moreover, the Heterotrait-Monotrait ratio (HTMT) is an estimate of what the true correlation between two constructs would be if they were perfectly measured (i.e., if they were perfectly reliable). Furthermore, HTMT is the mean of all correlations of indicators across constructs measuring different constructs (i.e., the Heterotrait-Monotrait correlations) relative to the (geometric) mean of the average correlations of indicators measuring the same construct (i.e., the Heterotrait-Monotrait correlations) and can be used for discriminant validity assessment (Hair et al., 2017). As such, the accepted level of HTMT is 0.90, as recommended by Gold et al. (2001) (see Table 4).

Table 4 HTMT ratio

	CO	*PEOU*	*PR*	*PU*	*SAT*	*US*
CO						
PEOU	.057					
PR	.715	.093				
PU	.030	.636	.036			
SAT	.067	.344	.116	.292		
US	.684	.120	.742	.042	.049	

6.3 Structural model

The structural model represents the theoretical or conceptual element of the path model. Also referred to as the inner model in PLS -SEM, the structural model includes the latent variables and their path relationships (Hair et al., 2017). The next step after the evaluation of the measurement model is to assess the structural model. In sync with PLS-SEM, there are five steps required to assess the structural model including the assessment of collinearity (step one), assessment of the path coefficients (step two), coefficient of determination (R^2 value) (step three), blindfolding and predictive relevance Q^2 (step four), and effect size f^2 (step five) (Hair et al., 2017).

Table 5 illustrates the results of PLS bootstrapping consisting of the Beta value, t-values, p-values, hypothesis results (whether supported or not) BCILL, BCIUL, f^2, and VIF scores. Furthermore, Appendix B summarises the results of the structural model and PLS bootstrapping.

Table 5 Summary of structural model (PLS bootstrapping)

H	*Path*	*Std. beta*	*Std. error*	*T-value*	*P values*	*Decision*	*BCILL*	*BCIUL*	f^2	*Effect size*	*VIF*
H1	PEOU -> PU	.581	.042	13.912	P < .001 (.000)	Supported	.515	.648	.510	Large	1.001
H2	PEOU -> US	.171	.058	2.949	P < .01 (.002)	Supported	.069	.263	.022	Small	1.510
H3	PEOU -> SAT	.219	.070	3.141	P < .01 (.001)	Supported	–.333	–.103	.035	Small	1.540
H4	PU -> US	.135	.066	2.035	P < .05 (.021)	Supported	–.243	–.025	.022	Small	1.510
H5	PU -> SAT	.153	.060	2.560	P < .01 (.005)	Supported	–.253	–.056	.027	Small	1.528
H6	US -> SAT	.029	.060	.485	P > .05 (.314)	Rejected	–.133	.063	.001	No effect	1.021
H7	US -> PR	.410	.049	8.341	P < .001 (.000)	Supported	.326	.485	.195	Medium	1.482
H8	SAT -> PR	.069	.036	1.931	P < .05 (.027)	Supported	–.130	–.010	.029	Small	1.003
H9	US*CO->PR	.095	.046	2.063	P < .05 (.020)	Supported	.011	.150	.027	Small	1.099

6.3.1 Assessment of the structural model for collinearity issues

The first step in the structural model is to assess collinearity issues. It is vital to safeguard against collinearity issues between the constructs before performing a latent variable analysis in the structural model. As such, the collinearity has been measured by measuring the VIF value. The recommended threshold value for the assessment is 3.3 (Diamantopoulos and Siguaw, 2006). In this study, as illustrated in Table 5, all inner VIF values for the constructs are within the range of 1.001 to 1.540. All are less than 3.3, thus indicating that collinearity is not a concern in this study.

6.3.2 Assessing the significance of the structural model relationships

In order to test the hypotheses, the bootstrapping procedure has been employed to produce results for each path relationship in the model, as demonstrated in Table 5.

Bootstrapping in PLS is a non-parametric test which comprises of repeated random sampling with replacement from the original sample with the goal of producing a bootstrap sample and attaining standard errors for hypothesis testing (Hair et al., 2017). In this regard, Chin (2010) suggested performing bootstrapping with 1,000 samples. In this study, nine hypotheses have been developed for the constructs. To test the significance level, t-statistics for all paths have been generated using the bootstrapping function in SmartPLS 3.3. The bootstrapping has been set to a significance level of 0.05, one-tailed test, and 1000 subsamples. The critical value for the significance level of 5% ($\alpha = 0.05$) is 1.645 for the one-tailed test (Ramayah et al., 2018).

Based on the findings shown in Table 5, the value of the path coefficients has a standardised value approximately between -1 and +1 (values from -0.029 to 0.611). Hair et al., (2017), estimated path coefficients near +1 demonstrate strong positive relationships and the closer the value gets to zero, the weaker the relationships become. In the next step, toward conducting the t-test, relationships are found to have t-values of more than or equal to 1.645. Therefore, these relationships are significant at 0.05 for H1 ($\beta = 0.581$, $t = 13.912$, $P < 0.001$), H2 ($\beta = 0.171$, $t = 2.949$, $P < 0.01$), H3 ($\beta = 0.219$, $t = 3.141$, $P < 0.01$), H4 ($\beta = 0.135$, $t = 2.035$, $P < 0.05$), H5 ($\beta = 0.153$, $t = 2.560$, $P < 0.01$), H7 ($\beta = 0.410$, $t = 8.341$, $P < 0.001$), and H8 ($\beta = 0.069$, $t = 1.931$, $P < 0.05$), whereas H6 ($\beta = 0.029$, $t = 0.485$, $P > 0.05$) was observed to be insignificant. A summary of these findings is illustrated in Table 5.

6.3.3 The coefficient of determination (R^2)

The next stage is to evaluate the model's predictive accuracy through the derived value of the coefficient of determination (R^2). The value of R 2 is linked to the model's predictive power and ranges from zero to one, with a higher value indicating a higher level of predictive accuracy (Hair et al., 2017). Using the SmartPLS algorithm, the value of R^2 has been calculated as shown in Table 5.

Since there exist a variety of sets of rules regarding the acceptable value of R^2, the values of 0.02, 0.13, and 0.26 represent weak, moderate, and substantial level of predictive accuracy (Cohen, 1989). Overall, referring to Table 6, user satisfaction (SAT), actual usage (US), and work cooperation (CO) explain 48.5% of performance (PR) which indicates a substantial level of predictive accuracy. Also, PEOU explains 33.8% of the variance in PU. This signifies a substantial level of predictive accuracy. Moreover, actual

usage (US) clarifies 11.2% of user satisfaction (SAT), indicating a weak level of predictive accuracy. In addition, PEOU and PU explain 2.1% of the variance in actual usage (US) and this represents a weak level of predictive accuracy.

Table 6 The coefficient of determination (R^2)

Variable	*R square*
PR	.485
PU	.338
SAT	.112
US	.021

On the whole, the R^2 values found in this study are extremely similar to those reported in a majority of extant works of research in the corresponding literature. For instance, in a study conducted by Kwahk et al. (2020), the R^2 value reported is 39.7% from which it can be concluded that the model can predict up to 48.6% of the factors influencing performance (PR). This percentage is deemed to be satisfactory in the context of a social science study.

6.3.4 Assessment of the effect size (f^2)

In this stage, the effect sizes (f^2) have been evaluated. The value of f^2 is connected to the relative impact of a predictor construct on endogenous constructs. According to Sullivan and Feinn (2012), aside from reporting the p-value, both the substantive significance (effect size) and statistical significance (p-value) are crucial to be reported. Furthermore, Cohen (1988), guideline has been followed to measure the effect size. Based on Cohen (1988), the values of 0.02, 0.15, and 0.35 represent small, medium, and large effects respectively.

Table 5 showed that PEOU has a large effect on generating the value of R^2 for PU. In addition, PU, PEOU has a small effect on the production of the value of R^2 for user satisfaction (SAT), whereas actual usage (US) has no effect on the production of the value of R^2 for user satisfaction (SAT). Furthermore, PU and PEOU has a small effect on the production of the value of R^2 for actual usage (US). Moreover, actual usage (US) has a medium effect on the production of the value of R^2 for employee performance (PR), and user satisfaction (SAT) has a small effect on the production of the value of R^2 for employee performance (PR).

6.3.5 Assessment of the predictive relevance (Q^2)

As the final step, Hair et al., (2017), suggested that the predictive relevance of the model is assessed through the blindfolding procedure (see Table 7). On this subject, the value of Q^2 is larger than zero, implying that the model has sufficient predictive relevance. The analysis of the value of Q^2 or predictive relevance has been conducted using the blindfolding procedure. As such, on the foundation of the blindfolding assessment, the values of the predictive relevance Q^2 for performance (PR), PU, user satisfaction (SAT), and actual usage (US) are 0.335, 0.316, 0.083, and 0.014 respectively. This indicates that the model is in possession of predictive relevance since the Q^2 values are considerably above zero.

Table 7 The predictive relevance (Q^2)

Variable	Q^2
PR	.335
PU	.316
SAT	.083
US	.014

6.3.6 Assessment of moderation analysis

After evaluating the direct effect, the moderation hypothesis has been tested. A moderator is characterised as a third construct with the ability to change or affect the relationship between the independent and dependent variables (Dawson, 2014; Hair et al., 2017). This study has utilised continuous types of data as the moderation and the corresponding analysis has been conducted via SmartPLS 3.3.

In this study, the following hypothesis has been formulated:

H9 With high levels of work cooperation, the positive relationship between DAW usage and employee performance becomes strengthened.

Furthermore, the moderation assessment follows the orthogonalising approach (Chin, 2010). This approach builds on the indicator approach and requires creating all product indicators of the interaction terms (Ramayah et al., 2018).

Hence, the first step is to create the interaction effect between the two indicators of actual usage (US) and work cooperation (CO). The value of R^2 for the main model (without the interaction) is 0.485. However, with the interaction effect included in the model, the value of R^2 has become 0.494. The change in this value is about 0.009 (additional variance). After this step, the effect size has been calculated using the following formula:

$$f^2 = \left(R^2 \text{ included moderator} - R^2 \text{ excluded moderator}\right) \Big/ \left(1 - R^2 \text{ included moderator}\right)$$

$$f^2 = (.494 - .485) / (1 - .485)$$

$$f^2 = .017$$

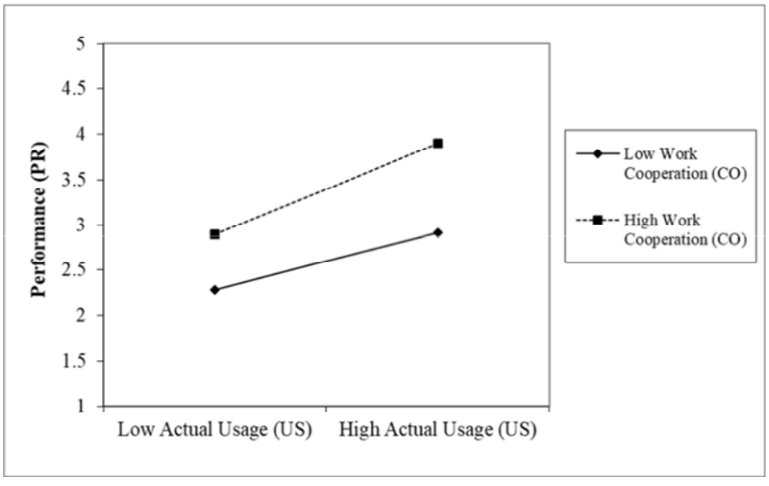
Based on the guidelines set by Kenny (2018), the values of 0.005, 0.01, and 0.025 respectively demonstrate the standards for small, medium, and large effect sizes. As such, considering the value of 0.017, it can be concluded that the effect size is medium. However, the value of the beta confident for the interaction of US*CO is 0.095 (refer to Table 5) with a p-value of 0.020. Therefore, to obtain the significance of the relationships, bootstrapping procedures have been conducted. As illustrated in Table 8, the inter-action term of US*CO is significant (t = 2.063) for the one-tailed test, with a significance level of 0.05. Therefore, it can be concluded that hypothesis H9 can be accepted.

Table 8 Moderation model assessment

Path	*Path coefficient*	*Std. error*	*t-value*	f^2	*p-value*
US*CO -> PR	.095	.046	2.063	.017	.020

In order to further elaborate the moderating phenomenon of work cooperation (CO), the pattern of the interaction effect has been plotted to observe how the moderator changes the relationship between actual usage (US) and performance (PR) (Dawson, 2014). Thus, Figure 2 highlights the two lines that signify a positive connection between actual usage (US) and performance (PR). It also indicates the presence of the moderating effect of work cooperation (CO) on the relationship between actual usage (US) and performance (PR).

Figure 2 Moderation effect of CO between US and PR



7 Discussions

In this study, PEOU was hypothesised to have a positive impact on PU and this hypothesis is supported. Hence, it is suggested that when the DAW system is easy to be utilised, this can assist users in acquiring accurate information from the DAW system and performing critical tasks. This result is supported by Koksalmis and Damar (2019), who discovered that higher PEOU of a mandatory system can lead to higher PU.

Moreover, PEOU was hypothesised to have a positive influence on both DAW usage and SAT. The finding shows that these hypothesises are also supported (Mutahar et al., 2018; Arpaci et al., 2020), asserted that higher PEOU in a system can lead to enhancements in its usage. This outcome suggests that when the DAW system is easy to be used, this can aid in the improvement of DAW usage. Andarwati et al. (2019), also revealed that PEOU have a positive impact on SAT in the context of e-governments. The findings suggest that when the DAW system is easy to be used, users become satisfied with utilising it.

In addition, PU was hypothesised to have a positive influence on both DAW usage and SAT. The finding shows that these hypothesise are also supported. Jahmani et al. (2018) discovered that PU can positively affect DAW usage. This suggests that when the DAW system helps users have accurate information from the DAW system and perform critical tasks, this can contribute to the enhancement of DAW usage. Mahande et al. (2019) also asserted that PU can positively influence SAT. This result suggests that when the DAW system helps users obtain accurate information from the DAW system and perform critical tasks, they become satisfied using the system.

Moreover, DAW usage was hypothesised to have a positive influence on both SAT and PR. The finding shows that these hypothesise are also supported. However, the positive influence of DAW usage on user satisfaction is not supported. Makokha and Ochieng (2014) concluded a positive influence of actual usage on PR. Also, Hou (2018), discovered that SAT have a positive influence on PR, whereas, actual usage found to have no positive impact on SAT. This suggests that when employees utilise the DAW system effectively and satisfied using the DAW system, the performance of employees can be improved. This result also suggests that the high level of DAW usage may lead to less employees' satisfaction due to the high level of other daily work routine in public sectors. Therefore, manages should balance the duration of DAW usage with other daily work routine to prevent employees to be less satisfied using the DAW system.

Finally, work cooperation was hypothesised to have a moderating effect on the positive relationship between DAW usage and employee performance such that high levels of work cooperation improve employee performance. This hypothesis is supported. When employees cooperate with each other effectively, they would be able to use the DAW system more effectively and thus the performance of employees can be improved. Therefore, it can be argued that a high level of work cooperation is important in the improvement of the performance of employees using the DAW system in MOSAL.

8 Practical and theoretical implications

This research makes practical contributions in several ways. The aim of EDRMS is to facilitate e- government initiatives through improved communication, access to information, and data sharing. Several factors drive MOSAL to establish EDRMS initiatives. One of the key elements is cost reduction. EDRMS initiatives are driven by budgets and funding. Through sharing information and processes, government agencies may be able to reduce IT costs and streamline procedures that allow people to access information over the internet.

This research provides clear insight for policy makers toward the successful implementation of EDRMS. On this subject, EDRMS initiatives have certain technical challenges in place, including the lack of common standards and functional technology between departments and agencies. Also, ICT infrastructure is recognised as one of the main challenges for EDRMS adoption. Intranetworking is needed to allow for efficient information sharing and to open new contact and access networks for new services (Ndou, 2004). As such, decision makers and managers should provide more efficient infrastructure for employees in order to achieve a smooth implementation and adaptation of EDRMS.

Last but not least, major challenges regarding the EDRMS initiative stem from the lack of ICT skills. This is a particular problem in countries that are still in the process of adopting EDRMS, where there has existed a consistent lack of qualified employees and inadequate training in human resources for years. The availability of adequate knowledge is necessary for the successful implementation of EDRMS. It requires human capacities in technological, commercial and management areas. Technical abilities for the implementation, maintenance, design and installation of ICT infrastructure as well as skills for using and managing online processes, functions, and customers are compulsory. In order to address developmental issues related to the human capital, knowledge management initiatives are required to be concentrated on staff training so as to create and develop basic skills needed for EDRMS adoption.

Theoretically, this study has integrated two models consisting of the TAM and the Delone and McLean Model (D&M). TAM model was a useful model to predict an individual's usage of to EDRMS system (AlShibly, 2014; Balogun et al., 2019; Herawan and Sensuse, 2018; Lewellen et al., 2014; Lewellen, 2015; Mammo, 2012). However, the model lacked explain the outcome of individual usage and lacked to introduce user satisfaction as an important element in information system success (D'Ambra et al., 2013; Moghaddasi and Heidari, 2019). Thus, this study contributed to fill this gap by combining these two models to determine the performance of employees in MOSAL. Furthermore, this study contributed to add work cooperation as a moderator between the relationship between DAW usage and employees' performance, such that the high level of work cooperation can improve the positive relationship between DAW usage and employees' performance in MOSAL.

In addition, the study contributed to address the moderating effect of work cooperation on the relationship between actual usage and employee performance has been explained in this research. The role of work cooperation as a moderating effect was observed to be positively significant, providing a new explanation of the relationship between actual usage and employee performance. This serves as another theoretical implication of this study.

9 Limitation and future suggestions

This research provides strong evidence not only in regard to defining the key factors affecting the EDRMS usage, but also it discusses the performance of EDRMS users as outcome of EDRMS usage. All factors impacting the performance of EDRMS users have not been fully covered. There are major variables, such as facilitating state and perceived compatibility that serve as important factors that can be covered in future research. Secondly, the research model and hypotheses were tested using data drawn only from a single ministry and limited to one ministry in Kuwait. In order to generalise the findings, this study can be expanded to other governmental settings. Applying this model in other countries in the same region can give a better understanding of the factors affecting the performance of employees in the public sectors. Lastly, the cross- sectional nature of this research may inhibit the testing of causality between the constructs included in the research model. Thus, longitudinal studies using causal research designs would be useful. To ensure robust results, these views should be considered in future research.

10 Conclusions

Based on the findings of this study, the implementation of EDRMS can strength the governance basis and, thus, run in a more effective, efficient, and accountable manner. Furthermore, the EDRMS has the potential to aid the government in determining main priorities for the completion of the corresponding infrastructure as well as the development of applications and systems that are essential to be implemented immediately in all ministries in Kuwait. Findings of this research revealed that PEOU found to have a positive influence on PU, DAW usage, employees' satisfaction. Furthermore, PU found to have a positive influence on DAW usage and employees' satisfaction. Moreover, DAW usage and employees' satisfaction found to have a positive influence on employees' performance. However, DAW usage found to not have a positive influence on employees' satisfaction. The study also contributed to found that the high work cooperation can strength the positive relationship between DAW usage and employees' performance. Finally, the development and implementation of EDRMS are expected to be accelerated and significantly improve Kuwait's e-government services.

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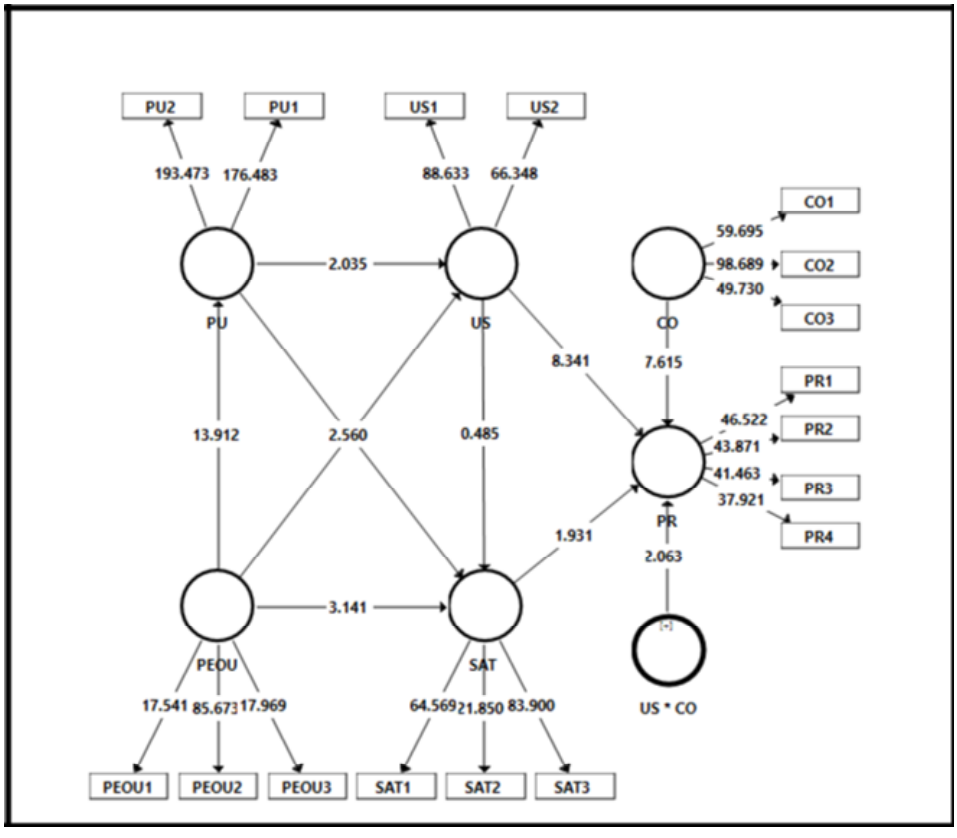
Appendix A

Table A1 The direct effect of work cooperation (CO) on employee performance (PR)

Path	*Std. beta*	*Std. error*	*T-value*	*P values*	*BCILL*	*BCIUL*	f^2	*Effect size*	*VIF*
CO -> PR	.399	.052	7.615	.000	.311	.485	.202	Medium	1.483

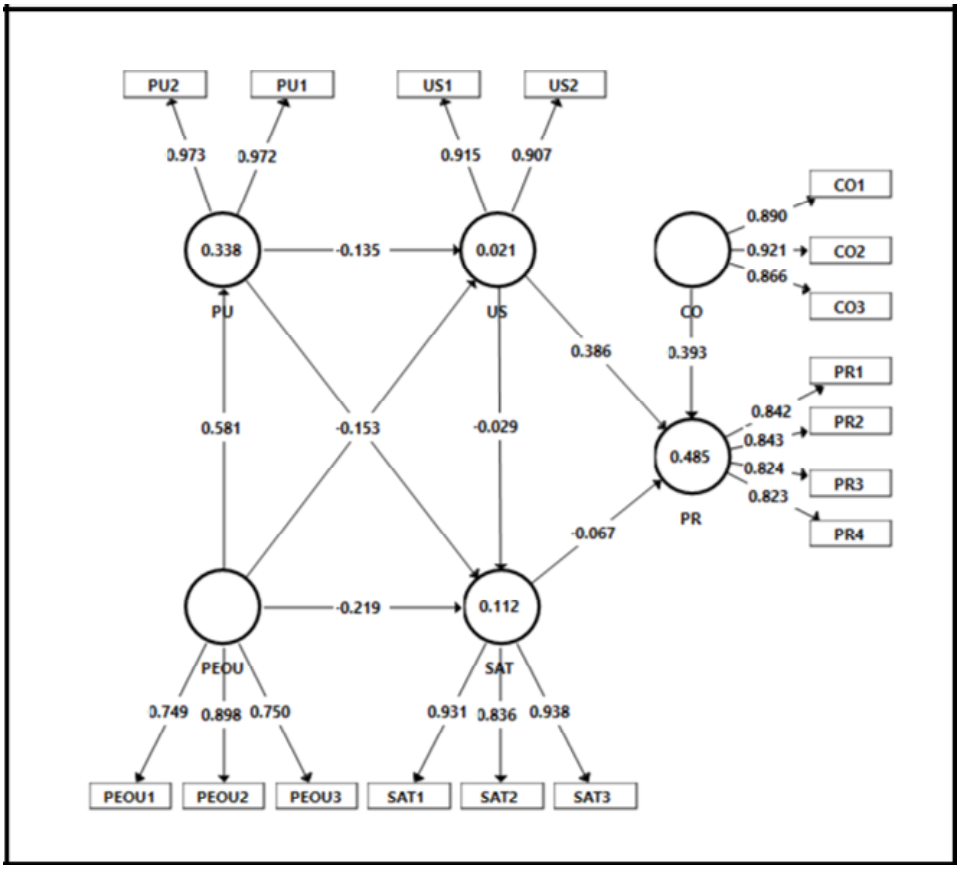
Appendix B

Figure A1 PLS bootstrapping results



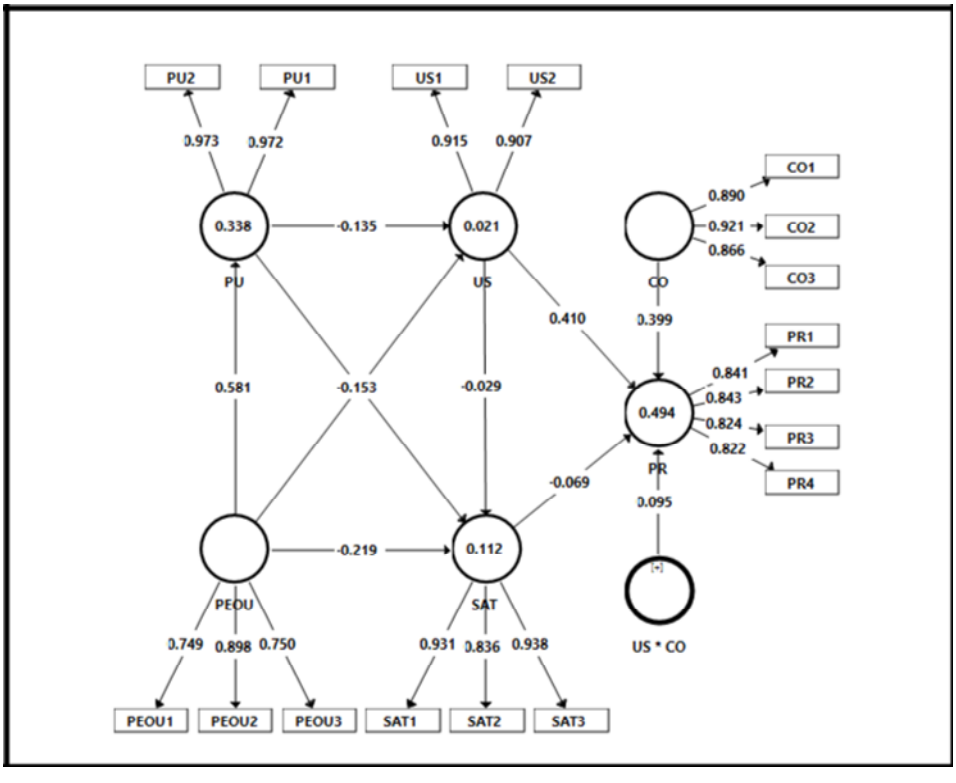
Appendix C

Figure A2 PLS algorithm before including the moderator



Appendix D

Figure A3 PLS algorithm after including the moderator



Appendix E

Table A2 Research instruments

Construct		*Items*	*Rating scale*	*Source*
Perceived ease of use (PU)	PEOU1	Learning to use the DAW system is easy for me	Five-point Likert scale: (1) Strongly disagree to (5) Strongly agree	Huang (2008)
	PEOU2	My interaction with the DAW system is clear and understandable		
	PEOU3	I find the DAW system to be flexible to interact with		
Perceived usefulness (PEOU)	PU1	Using DAW supports the critical part of my tasks	Five-point Likert scale: (1) Strongly disagree to (5) Strongly agree	Moon and Kim (2001)
	PU2	Using DAW enables me to accomplish tasks more quickly		
	PU3	Using DAW enables me to have more accurate information		
System usage (US)	U1	How often do you use the DAW system?	(U1) is measured with a five-point Likert scale consisting of one (once a day), two (several times a day), three (once a week), four (several times a week), and five (once a month).	Isaac et al. (2017)
	U2	How long do you use the DAW system each time?	(U2) is also measured with a five-point Likert scale, including one (less than one hour), two (one to two hours), three (three to four hours), four (four to five hours), and five (more than five hours).	
User satisfaction (SAT)	SAT1	My decision to use the DAW system was a wise one	Five-point Likert scale: (1) Strongly disagree to (5) Strongly agree	Isaac et al. (2017)
	SAT2	The DAW system has met my expectations		
	SAT3	Overall, I am satisfied with the DAW system		
Employee performance (PR)	P1	The DAW system improves my productivity	Five-point Likert scale: (1) Strongly disagree to (5) Strongly agree	Ifinedo (2007)
	P2	The DAW system is beneficial for my work-related tasks		
	P3	The DAW system enhances the quality of my decision-making in performing my work-related tasks		
	P4	The DAW system saves me time in performing my tasks and duties		

Table A2 Research instruments (continued)

Construct		*Items*	*Rating scale*	*Source*
Work cooperation (CO)	Co1	Employees found it easy to work with each other	Five-point Likert scale: (1) Strongly disagree to (5) Strongly agree	Pitafi et al. (2018)
	Co2	Individual members were comfortable communicating with each other about what needed to be done		
	Co3	Employees cooperated in order to get the work done		
	Co4	Individual members were very willing to share information with each other about their work		