

## The Nexus between Self-Efficacy of LMS Usage and Motivational Regulation Strategies in Distance Education: Moderation of Academic Level

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### Abstract

This study intends to inspect the relationship between e-learner's Self Efficacy of Learning Management System (SELMS) usage and Motivational Regulation Strategies (MRSs) which are Interest Enhanced Strategies (IES) And Goal-Oriented Strategies (GOS). Moreover, the moderating impact of academic level was also investigated. A total of 119 e-learners who were enrolled in online courses took part in the study. Data was evaluated by using SPSS. The findings demonstrate that the e-learners use different motivational regulation strategies depending upon their level of self-efficacy in LMS usage. Their academic level does not matter since it does not moderate the motivation regulation strategies. Results designate that SELMS usage is significantly and positively associated with e-learners' motivation regulation strategies. It is also found that the academic level of e-learners does not moderate the relationship between predictor and outcome variables. It only moderates the association of SELMS usage and performance approach self-talk strategies. Consequently, the results endow the e-educators and instructional designers with hands-on recommendations on how to upkeep students' motivational requirements and additionally endorse their use of SELMS in e-education programs in higher education.

**Keywords:** *Self-efficacy of learning management system usage, goal-oriented motivation, academic level, distance education, interest-enhanced motivation*

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## **Introduction**

With the swift intensification of Massive Open Online Courses (MOOCs), various employees from varied industries are more fascinated in e-learning (since it saves their time and cost as compare to the conventional/blended education system) in professional growth or degree attainment (Im & Kang, 2019). E-learning as the forthcoming educational system for the developing economies is not yet entirely thought out. Nevertheless, the mounting eminence is on learning particularly, during COVID pandemic, the traditional/conventional learning system has been switched to the online mode of education to a great extent (Shahzadi & Ali, 2020; Giannini, 2020). It is once in a generation chance to perk up the system of education to survive the pandemic and other such prospect crises. E-learning is swiftly mounting in executive and educational fields e.g., government, online and traditional universities, school level, and organizations. People are seeking new skills by attending online courses and/or online professional degrees while managing their other responsibilities of work and life. Generally, “IT, business, and other soft skills related courses are being taught in e-schools” (Urdan & Weggen, 2000) which are extensively advantageous for employees if they want to opt for upskilling and/or reskilling by learning the contemporary skills as per market need. In Pakistan, online learning structure is progressing in both conventional and Cyber Universities. Virtual University is the made a new ground of e-learning in Pakistan as pioneer in e-learning. Its teachers are the adviser and career counsellors of prospective generations (Shahzadi, 2017; Shahzadi, & Raja, 2021a; Shahzadi, & Raja, & Ali, 2021; Shahzadi, & Raja, 2021b). It is applicable to consider that majority of the students who prefer cyber universities, are among the working population and from rural areas. It creates a momentous prominence to work-on the ways by which the motivation regulation strategies can be enhanced by the cyber universities. We have selecting one variable from the learning environment i.e., Learning Management System (which is considered as one of the aspects of online learning environment). If there is favorable learning environment (enriched Learning Management Systems: LMS) provided by cyber institutions, it will for sure guarantee a favorable learning environment to their e-learners. Consequently, it is applicable to appraise if the learners’ self-efficacy for LMS usage is regulating their motivation (motivation regulation strategies). We have considered two most important sets of motivation regulation strategies i.e., interest enhancement and goal-oriented motivation regulation strategies.

We also investigated if the academic level of student moderates between the study relationships or not.

Online education system persuades its e-learners to grow to be self-regulated in learning (they are required to be dexterous learners to commence, direct, and deal with their cognitive, meta-cognitive, and motivational actions for their own victorious learning experiences (Zimmerman, 2002). That is why; the environment of e-learning encourages its learners to be exceedingly self-regulated learners for improving their cognitive and motivational endeavors (Park & Yun, 2017). In other words, the motivation of e-learners is considered as a fundamental antecedent of effectual e-learning to pursue learning targets/goals (Lim, 2004).

Motivational regulation is the process where learners vigorously observe, regulate, and carry on their learning motivations to endorse their learning attempts and determination to effectively finish the assigned tasks that they may lose their enthusiasm due to a range of causes (e.g., too complicated or boring tasks) (Wolters, 2003). Hence, learners who enthusiastically commence, monitor, and maintain their motivation to learn can self-regulate their learning process and practice in self-directed methods. Wolters (2003) proposed five Motivational Regulation Strategies (MRSs) i.e., “interest enhancement, performance self-talk, mastery self-talk, environmental control, and self-consequating”. More accurately, Schwinger, Steinmayr, and Spinath (2009) specified that how low motivation necessitates the elevated motivation, by utilizing MRSs. Lohbeck & Moschner (2022) recommended to study other predictor variables of student’s motivational regulation strategies. Park and Yun (2017) recommended to investigate the impact of e-learners’ self-efficacy of learning management system (LMS) usage of MRSs. Therefore, we designed following research objectives for this study:

RO1: To investigate the impact of Self Efficacy of Learning Management System (SELMS) usage on Interest Enhanced MRSs (IEMRSs).

RO2: To investigate the impact of Self Efficacy of Learning Management System (SELMS) usage on Goal-Oriented MRSs (GOMRSs).

RO3: To investigate the moderating role of SAL on the relationship between Self Efficacy of Learning Management System (SELMS) usage and Interest Enhanced MRSs (IEMRSs).

RO4: To investigate the moderating role of SAL on the relationship between Self Efficacy of Learning Management System (SELMS) usage and Goal-Oriented MRSs (GOMRSs).

## **Literature Review**

### ***Self-Efficacy for Learning Management System (SELMS) Usage in Distance Education:***

The progression of motivational regulation is presumed to be influenced by individual antecedent factors (Schwinger & Stiensmeier-Pelster, 2012) for example: students' personality traits, and cognitive abilities. Amongst the diverse individual factors, learners' self-efficacy (for regulation of motivation) appears to signify a momentous source of probable achievement or catastrophe in regulation of motivation. Nevertheless, self-efficacy is tremendously with efficacious learning in the processes of self-regulation (Dent & Koenka, 2016), however, to the authors' best of knowledge and literature consultation reveals that there are no/very-limited studies which have focused on the role of self-efficacy for learning management system usage for motivation regulation. This study therefore, investigates the impact of SELMS usage on MRSs in online distance education system.

### ***Motivation Regulation Strategies (IEMRSs, GOMRSs)***

Self-regulated learning is the process where students enthusiastically adjust their knowledge by cognition, motivation (Shahzadi, Hameed, & Kashif, 2015), meta-cognition, and actions (Schunk & Zimmerman, 1994). Majority of the studies in the education sector have focused on cognitive and meta-cognitive progressions (e.g., learning approaches and their impact on the process of learning (Wolters & Benzon, 2013). Nevertheless, the hypothetical impressions of self-regulated education likewise highlight the significance of motivation and self-regulation of motivation (or motivation regulation strategies) for efficacious learning (Schwinger & Stiensmeier-Pelster, 2012). The Motivation Regulation Strategies (MRSs) are such strategies which designates the vigorous and conscious control of one's particular motivation (Wolters, 2003). There is sufficient literature representing that MRSs are an imperative precursor of accomplishment even outside the cognitive capabilities and previous knowledge (Schwinger & Stiensmeier-Pelster, 2012). This study emphasized only two sets of MRSs i.e., Interest-Enhancement Strategies (IES) and Goal-Oriented Strategies (GOS) (figure 1). Both types are the prevailing precursor of learners' motivation beliefs and cognitive learning.



Figure 01: Set and type of motivation regulation strategies

### ***Interest Enhancement MRSs (IEMRSs) and SELMS Usage***

There are two set types of interest enhancement strategies of motivation regulation i.e., Enhancement of Personal Significance (EPS) and Enhancement of Situational Interest (ESI). EPS is creating a relationship between the task and one's own particular interests and likings (Schwinger & Stiensmeier-Pelster, 2012). Park and Yun (2017) recommended to study e-learners SELMS usage since LMS is the foremost method of learning content delivery extensively being practiced in the higher education sector for e-learning; henceforth it explains the learning environment where e-learners work. For this drive, students can boost their situational interest by involving their particular interests with the learning object. Therefore, we hypothesized that:

H1: *Self Efficacy of Learning Management System (SELMS) usage is significantly associated with Enhancement of Personal Significance (EPS).*

The second type of interest enhancement strategies in our research is Enhancement of Situational Interest (ESI). It is converting a relatively boring task into a more captivating by imaginative modifications (Schwinger & Stiensmeier-Pelster, 2012). For this drive, students can boost their situational interest by making a learning situation more playful. Situational interests are significantly and positively related to the cognitive performance (Shahzadi, Rafiq, & Ali, 2022; Shahzadi, Ali,

& Naeem, 2021) (e.g., analysing comprehension and online work). ESI is also significantly associated with e-learners' lessened inferencing, intensive considerations, and information amalgamation based on past knowledge. Such individual interests significantly influence the attention, remembrance, recognition, and determination (Hidi & Renninger, 2006). It is hypothesized that:

H3: *Self Efficacy of Learning Management System (SELMS) usage is significantly associated with Enhancement of Situational Interest (ESI).* Student's Academic Level (SAL) (i.e., undergraduate and graduate) greatly impacts the practicing of Motivation Regulation Strategies (MRSs) in distance education due to the development of diverse self-regulations. Correspondingly, the individual factors (e.g., academic level, age, level of interest, and motivational beliefs) can greatly impact their motivational requirements, the selection of any particular MRSs, and use of cognitive learning strategies (Schwinger et al., 2009). Literature on learners' perceived motives for motivational issues and subsequent MRSs usage have stated encouraging relationship between the MRSs usage and learners' self-reported motivational (Schwinger et al., 2009). Hereafter, diverse motivational requirements result in picking diverse MRSs. Additionally, e-learners of graduate level were found to display elevated self-regulations and improved practices of learning strategies (Artino & Stephens, 2009). Hence, the likelihood of developmental variance in self-regulation among undergraduate and graduate level e-learners, guarantees the additional investigation on its impact on MRSs, especially in distance learning settings (Schunk, Meece, & Pintrich, 2012). Therefore, following hypotheses have been devised:

H2: *SAL moderates the relationship between Self Efficacy of Learning Management System (SELMS) usage and Enhancement of Personal Significance (EPS).*

H4: *SAL moderates the relationship between Self Efficacy of Learning Management System (SELMS) usage and Enhancement of Situational Interest (ESI).*

### ***Goal Oriented MRSs (GOMRSs) and SELMS Usage***

Goal-oriented MRSs have three definite strategies which accentuates the goal attainment in academic responsibilities (Martin, 2013).

Performance Approach Self-Talk (PAp.ST) and Performance Avoidance Self-Talk (Pav.ST) are the strategies related to learners' performance goals. Learners use the Pav.ST strategy to outperform other learners and get higher grades than their class fellows to determine their capability. Students also use Pav.ST strategy to avoid revealing their ineffectiveness by avoiding lower grades than class fellows and not fail in the exams (Kadioglu & Uzuntiryaki-Kondakci, 2014). The Mastery Self-Talk (MST) strategy emphasizes the goal to master the contemporary and challenging tasks by improving their competence. Students who use the MST strategy are internally motivated and use effective strategies of learning (Ames & Archer, 1988). These three strategies are based on achievement goal theory (Elliot, 1999) which also identified these three strategies. Therefore, following hypotheses are designed:

*H5: Self Efficacy of Learning Management System (SELMS) usage is significantly associated with Performance Approach Self-Talk (Pap.ST).*

*H7: Self Efficacy of Learning Management System (SELMS) usage is significantly associated with Performance Avoidance Self-Talk (PAv.ST).*

*H9: Self Efficacy of Learning Management System (SELMS) usage is significantly associated with Mastery Self-Talk (MST).*

Student's Academic Level (SAL) significantly impacts MRSs in online education. Correspondingly, the individual factors (e.g., academic level, age, level of interest, and motivational beliefs) can greatly impact their motivational requirements, the selection of any particular MRSs (Schwinger et al., 2009). Literature on learners' perceived motives for motivational issues and subsequent MRSs usage have stated encouraging relationship between the MRSs usage and learners' self-reported motivational requirements (Schwinger et al., 2009). Hereafter, diverse motivational requirements result in picking diverse MRSs. Student's Academic Level (SAL) significantly impacts MRSs in online education. Harmoniously, the individual factors can greatly impact their motivational requirements, and the selection of MRSs (Schwinger et al., 2009). Hence, diverse motivational requirements result in picking diverse MRSs. E-learners display an elevated self-regulations and enhanced practices of learning strategies (Artino & Stephens, 2009). Henceforward, the likelihood of developmental variance in self-regulation among undergraduate and graduate level e-learners,

guarantees the further investigation on its impact on MRSs, especially in distance learning settings (Schunk et al., 2012). Therefore, following hypotheses have been devised:

H6: SAL moderates the relationship between Self Efficacy of Learning Management System (SELMS) usage and Performance Approach Self-Talk (Pap.ST).

H8: SAL moderates the relationship between Self Efficacy of Learning Management System (SELMS) usage and Performance Avoidance Self-Talk (PAv.ST).

H10: SAL moderates the relationship between Self Efficacy of Learning Management System (SELMS) usage and Mastery Self-Talk (MST).

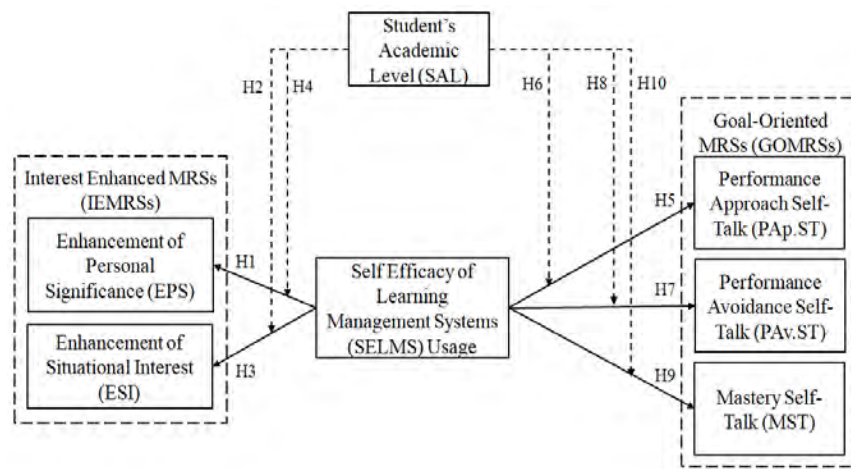


Figure 02: Theoretical Framework

## Methodology

### Participants

The study participants were the e-learners enrolled in distance education system in Pakistan's pioneer cyber university i.e., Virtual University of Pakistan. Two levels of e-learners were among the participants i.e., undergraduate and graduate level students. The students were selected who were enrolled in a research-based course. The sample size was 240 participants and data were collected in different online sessions with the students by using the convenience sampling technique



since it was convenient for the researchers to collect data and it enhances the response rate as well if it is compared with purely online data collection source (e.g., via email or other online forums).

### ***Research Instruments***

The 20 measuring items of MRSs [3 items of EPS (IEMRSs), 5 items of ESI (IEMRSs), 5 items of Pap.ST (GOMRSs), 3 items of Pav.ST (GOMRSs), and 4 items of MST (GOMRSs)] were adopted from the study of (Schunk et al., 2009). The participants were enquired to rate the items on a five-point scale ranging from 1 (very rarely) to 5 (very often). Whereas, a total of 24 items of SELMS Usage (8 items of accessing information, 4 items of posting information, 3 items of file management, and 9 items of advance features) were adopted from the learning management self-efficacy survey (Martin et al., 2010) to consider students' self-efficacy in the LMS in online distance courses. The participants were enquired to rate the items on a four-point Likert scale ranging from 1 (not confident at) to 4 (very confident).

### ***Tools and Techniques***

Data was analysed by using SPSS software. For descriptive statistics, frequency distribution, mean, standard deviation, and correlation tests were performed along with reliability analysis. Moreover, for inferential statistics, simple linear regression and process macro were used to test hypotheses. A simple linear regression analysis test was performed for each of the direct relationship hypotheses (H1, H3, H5, H7, and H9). The indirect hypotheses (moderation) were analysed for each of the direct relationship hypotheses (H2, H4, H6, H8, and H10) by using the PROCESS Procedure (Preacher and Hayes' model 1) for SPSS Version 3.5.3.

## **Results and Discussion**

### ***Data Preparation***

The questionnaire was distributed to a total of 240 participants, 126 were returned. Hence the response rate was 52.5%. It is noteworthy that there was no missing value while there were seven outliers and were removed hence there were 119 valid questionnaires for further data analysis.

### ***Participants' Demographics***

It is pertinent to note that the majority of the participants are males (76.5% males, and 23.5% females) and most of the students are undergraduates (77.3% undergraduates, 22.7% graduates). It is also noteworthy that the majority of the participants are in the age group of 30-

40 (64.7% in 30-40 age group, 23.5% in 20-30 age group, 10.1% in 40-50 age group, and 1.7% are above age 50).

#### **Measure of Internal Consistency**

To check the internal consistency, Cronbach alpha values were analyzed by performing reliability analysis. It is noteworthy that the Cronbach alpha value of all variables is  $>0.6$  which means all alpha values depicts acceptable level of reliability.

Table 01  
*Reliability*

Variable	No. of Items	Alpha
SELMS Usage	Accessing Information	8
	Posting Information	4
	File Management	3
	Advanced Features	9
MRSs	EPS (IEMRSs)	3
	ESI (IEMRSs)	5
	PAP.ST (GOMRSs)	5
	PAV.ST (GOMRSs)	3
	MST (GOMRSs)	4

In the above table, SELMS usage stands for the self-efficacy for LMS usage, EPS is Enhancement of Personal Significance, IEMRSs is Interest Enhanced Motivational Regulation Strategies. ESI is Enhancement of Situational Interest, PAP.ST is Performance Approach Self-Talk, GOMRSs are the Goal Oriented Motivational Regulation Strategies, PAV.ST is Performance Avoidance Self-Talk, and MST is Mastery Self-Talk.

#### **Descriptive Statistics**

For descriptive statistics, we performed mean, Standard Deviation (SD) and correlation tests. Correlation is used to investigate the strength and direction of the study relationships. It is depicted by  $r$  and it usually ranges between  $-1$  to  $+1$ . It is noteworthy that all the variables are positively associated with each. Some of the correlation values ( $r$ ) depict strong correlation (e.g., .831, .774, and .774), some of the  $r$  values are moderately and some are weakly correlated.

Table 02  
Descriptive Statistics

	Mean	SD	SELMS_Usage	EPS_IEMRSs	ESI_IEMRSs	PAP.ST_GOMRSs	PAV.ST_GOMRSs	MST_GOMRSs
SELMS_Usage	3.62	.634	1					
EPS_IEMRSs	4.06	.785	.670**					
ESI_IEMRSs	4.22	.617	.600**	.614**	1			
PAP.ST_GOMRSs	2.77	.952	.813**	.385**	.363**	1		
PAV.ST_GOMRSs	4.28	.652	.586**	.744**	.562**	.346**	1	
MST_GOMRSs	4.12	.600	.774**	.632**	.775**	.427**	.572**	1

In the above table, SELMS usage stands for the self-efficacy for LMS usage, EPS is Enhancement of Personal Significance, IEMRSs is Interest Enhanced Motivational Regulation Strategies. ESI is Enhancement of Situational Interest, PAP.ST is Performance Approach Self-Talk, GOMRSs are the Goal Oriented Motivational Regulation Strategies, PAV.ST is Performance Avoidance Self-Talk, and MST is Mastery Self-Talk.

**Direct Relationship Analysis**

A simple linear regression analysis test was performed for each of the direct relationship hypotheses (H1, H3, H5, H7, and H9). It has been observed that  $\beta$  (standardized coefficients) value of all models is positive which means all the relationships are directly and positively associated with each other. We also found that the p-value of all hypotheses is <0.5 which means all the direct relationships (H1, H3, H5, H7, and H9) have been accepted.

Table 03  
Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1	.828	.085	.670	9.749	.000
2	.584	.072	.600	8.114	.000
3	1.220	.081	.813	15.099	.000
4	.603	.077	.586	7.827	.000
5	.732	.055	.774	13.216	.000

For model 1 (H1), simple linear regression test was performed to analyse if SELMS Usage significantly predicts EPS\_IEMRSs. We found that R (correlation) value of H1 is .67 which means that EPS and SELMS usage are positively and strongly correlated with each other. Whereas, the R Square value (.45) depicts that 45% change in EPS is due to the SELMS usage. We also found that the overall regression was statistically significant. It has been found that SELMS Usage significantly predicts EPS\_IEMRSs ( $\beta=.670$ ,  $P=.000$ ). Hence, H1 is accepted.

For model 2, simple linear regression test was performed to analyse if SELMS Usage significantly predicts ESI\_IEMRSs. The overall regression was statistically significant. We found that R (correlation) value of H3 is .600 which means that EPS and SELMS usage are positively and strongly correlated with each other. Whereas, the R Square value (.36) depicts that 36% change in ESI is due to the SELMS usage. It has been found that SELMS Usage significantly predicts ESI\_IEMRSs ( $\beta=.600$ ,  $P=.000$ ). Hence, H3 is accepted.

For model 3, simple linear regression test was performed to analyse if SELMS Usage significantly predicts PAp.ST\_GOMRSs. The overall regression was statistically significant. We found that R (correlation) value of H5 is .813 which means that PAp.ST\_GOMRSs and SELMS usage are positively and strongly correlated with each other. Whereas, the R Square value (.66) depicts that 66% change in Pap.ST\_GOMARS is due to the SELMS usage. It has been found that SELMS Usage significantly predicts PAp.ST\_GOMRSs ( $\beta=.813$ ,  $P=.000$ ). Hence, H5 is accepted.

For model 4, simple linear regression test was performed to analyse if SELMS Usage significantly predicts PAv.ST\_GOMRSs. The overall regression was statistically significant. We found that R (correlation) value of H7 is .59 which means that PAv.ST\_GOMRSs and SELMS usage are positively and moderately correlated with each other. Whereas, the R

Square value (.34) depicts that 34% change in PAv.ST\_GOMRSs is due to the SELMS usage. It has been found that SELMS Usage significantly predicts PAv.ST\_GOMRSs ( $\beta=.586, P=.000$ ). Hence, H7 is accepted.

For model 5, simple linear regression test was performed to analyse if SELMS Usage significantly predicts MST\_GOMRSs. The overall regression was statistically significant. We found that R (correlation) value of H9 is .77 which means that MST\_GOMRSs and SELMS usage are positively and moderately correlated with each other. Whereas, the R Square value (.60) depicts that 60% change in MST\_GOMRSs is due to the SELMS usage. The overall regression was statistically significant. It has been found that SELMS Usage significantly predicts MST\_GOMRSs ( $\beta=.774, P=.000$ ). Hence, H9 is accepted.

**Indirect Relationship Analysis**

In the below tables 4 and 5, SELMS usage stands for the Self-Efficacy for LMS usage, EPS is Enhancement of Personal Significance, IEMRSs is Interest Enhanced Motivational Regulation Strategies. ESI is Enhancement of Situational Interest, PAp.ST is Performance Approach Self-Talk, GOMRSs are the Goal Oriented Motivational Regulation Strategies, PAv. ST is Performance Avoidance Self-Talk, and MST is Mastery Self-Talk.

The indirect hypotheses (moderation) were analysed for each of the direct relationship hypotheses (H2, H4, H6, H8, and H10) by using the PROCESS Procedure (Preacher and Hayes’ model 1) for SPSS Version 3.5.3. H2 stated that SAL moderates the relationship between SELMS usage and EPS. R value is .67 while R Square value is .45. We found that  $\beta= -.0721, P=.7801 (P>0.05)$  which means H2 is rejected. It concludes that SAL does not moderate the relationship between SELMS usage and EPS. H4 stated that SAL moderates the relationship between SELMS usage and ESI. R value is .61 while R Square value is .60. We found that  $\beta= .3004, P=.1684 (P>0.05)$  which means H4 is rejected. It concludes that SAL does not moderate the relationship between SELMS usage and ESI.

Table 04

*Indirect Relationship Analysis (SELMS Usage SAL IEMRSs)*

		B	t	P	95% CI
Model	SELMS	.9679	1.9739	.0508	-.0034 (LLCI); 1.9391 (ULCI)
1 (H2)	SAL	.3455	.3587	.7205	-1.5621 (LLCI); 2.2530 (ULCI)
	Int_1	-.0721	-.2799	.7801	-.5827 (LLCI); .4384 (ULCI)
Model	SELMS	.0184	.0447	.9645	-.7982 (LLCI); .8351 (ULCI)
2 (H4)	SAL	-1.1572	-1.4291	.1557	-2.7611 (LLCI); .4468 (ULCI)
	Int 2	.3004	1.3862	.1684	-.1289 (LLCI); .7297 (ULCI)

H6 stated that SAL moderates the relationship between SELMS usage and PAp.ST\_GOMRSs. R value is .82 while R Square value is .67. Previously, R value was .77, and the R Square value was 0.60 in the direct relationship hypothesis (H5). Both values of R and R square have been increased as compare to the direct relationship. It means that moderation exists. We found that  $\beta = -.4046$ ,  $P = .0976$  ( $P > 0.05$ ) in the test of highest order unconditional interaction. The R Square change is .0080 which shows that there is moderation. The conditional effects of the focal predictor (SELMS usage) at values of the SAL(s), the P values becomes  $< 0.005$  ( $P = .000$ ) for SAL1 and SAL2. Both of their (SAL1 and SAL2) LLCI and ULCI values are positively signed. Hence, we conclude that H6 is accepted. It means SAL partially moderates the relationship between SELMS usage and PAp.ST\_GOMRSs.

Table 05

*Indirect Relationship Analysis (SELMS Usage SAL GOMRSs)*

		$\beta$	t	P	95% CI
Model 3 (H6)	SELMS	1.9826	4.3023	.0000	1.0698 (LLCI); 2.8954(ULCI)
	SAL	1.5807	1.7464	.0834	-.2121 (LLCI); 3.3735 (ULCI)
	Int_3	-.4046	-1.6701	.0976	-.8844 (LLCI); .0753 (ULCI)
Model 4 (H8)	SELMS	.7552	1.7360	.0852	-.1065 (LLCI); 1.6169 (ULCI)
	SAL	.5389	.6307	.5295	-1.1535 (LLCI); 2.2313 (ULCI)
	Int_4	-.0730	-.3191	.7502	-.5260 (LLCI); .3800 (ULCI)
Model 5 (H10)	SELMS	.2704	.8578	.3928	-.3540 (LLCI); .8947 (ULCI)
	SAL	-1.0057	-1.6246	.1070	-2.2320 (LLCI); .2205 (ULCI)
	Int_5	.2432	1.4677	.1449	-.0850 (LLCI); .5714 (ULCI)

H8 stated that SAL moderates the relationship between SELMS usage and PAv.ST\_GOMRSs. R value is .61 while R Square value is .37. We found that  $\beta = -.0730$ ,  $P = .7502$  ( $P > 0.05$ ) which means H8 is rejected. It concludes that SAL does not moderate the relationship between SELMS usage and PAv.ST\_GOMRSs. H10 stated that SAL moderates the relationship between SELMS usage and MST\_GOMRSs. R value is .78 while R Square value is .61. We found that  $\beta = .2432$ ,  $P = .1449$  ( $P > 0.05$ ) which means H10 is rejected. It concludes that SAL does not moderate the relationship between SELMS usage and MST\_GOMRSs.

**Discussion**

This study was aimed to investigate the impact of SELMS usage on MRSs (both interest-enhancement and goal-oriented strategies). To meet the research objectives, we formulated ten hypotheses. The first four

hypotheses are related to the interest enhancement motivation regulation strategies. The results depict that H1 (SELMS usage is significantly related to enhancement of personal significance) is accepted ( $\beta=.670$ ,  $P=.000$ ). These findings are consistent with the findings of (Shahzadi & Ali, 2020) who found that e-learner's internal value (self-efficacy) strongly impacts their motivation. These results are also aligned with the results of Zia-ur-Rehman and Shahzadi (2014). However, H2 is rejected ( $\beta= -.0721$ ,  $P=.7801$ ) which means SAL does not moderate the relationship between SELMS usage and students' enhancement of personal significance.

H3 (SELMS usage is significantly related to enhancement of situational interest) is accepted ( $\beta=.600$ ,  $P=.000$ ). These findings are consistent with the findings of (Shahzadi & Ali, 2020) who found that e-learner's internal value (self-efficacy) strongly impacts their motivation. These results are also aligned with the results of Zia-ur-Rehman and Shahzadi (2014). Whereas, H4 is rejected ( $\beta= .3004$ ,  $P=.1684$ ) which means SAL does not moderate the relationship between SELMS usage and enhancement of situational interest.

The hypotheses from five to ten are related to the goal-oriented motivation regulation strategies. It has been found that H5 (SELMS usage is significantly related to performance approach self-talk) is accepted ( $\beta=.813$ ,  $P=.000$ ). These findings are consistent with the findings of (Shahzadi & Ali, 2020) who found that e-learner's internal value (self-efficacy) strongly impacts their motivation. These results are also aligned with the results of Zia-ur-Rehman and Shahzadi (2014). Moreover, H6 (SAL moderates the relationship between SELMS usage and performance approach self-talk) is also accepted ( $\beta= -.4046$ ,  $P=.0976$ ).

H7 (SELMS usage is significantly related to performance avoidance self-talk) is accepted ( $\beta=.586$ ,  $P=.000$ ). These findings are consistent with the findings of (Shahzadi & Ali, 2020) who found that e-learner's internal value (self-efficacy) strongly impacts their motivation. These results are also aligned with the results of Zia-ur-Rehman and Shahzadi (2014). However, H8 is rejected ( $\beta= .2432$ ,  $P=.1449$ ) which means SAL does not moderate the relationship between SELMS usage and performance avoidance self-talk.

H9 (SELMS usage is significantly related to mastery self-talk) is accepted ( $\beta=.774$ ,  $P=.000$ ). These findings are consistent with the findings of (Shahzadi & Ali, 2020) who found that e-learner's internal value (self-efficacy) strongly impacts their motivation. These results are also aligned with the results of Zia-ur-Rehman and Shahzadi (2014). However, H10 is

rejected which depicts that SAL does not moderate the relationship between SELMS usage and mastery self-talk.

### **Conclusion**

This study concludes that the e-learners use diverse motivational regulation strategies. It does not matter what is their academic since it does not moderate the relationship between the predictor and the outcome variables. Results designate that SELMS usage is significantly and positively associated with e-learners' motivation regulation strategies. It only moderates the association of SELMS usage and performance approach self-talk strategies.

There are certain limitations of this study. Other types of motivational regulation strategies (self-consequating, proximal goal setting, and environmental control) were not incorporated in this study which will be an interesting insight to explore in the future studies. A comparative study will be appreciated by comparing the model in different cyber or conventional Universities. Moreover, this model can be compared across diverse disciplines to see the diverse results. To generalize the findings, it is recommended to collect data from the students of other courses as well by taking bigger sample size. Additionally, LMS usage is less significant for the blended learning students, since they have the opportunity to speak face-to-face with their teachers and students. We have investigated a single factor to observe the diverse MRSs in two different academic levels of students. There can be some other pertinent factors that could possibly elucidate the varied use of MRSs between the two academic levels of students. It would be appealing to analyse individual and contextual predictors (task characteristics) in the impending studies.

We have not investigated the prior distance education experience of our participants. Even though the participants were conscripted from research-based courses taught at undergraduate and graduate levels, there is a possibility that some participants might already have developed their inclination and thoughts about online learning, which could possibly impact MRSs. Such students may have familiarity with LMS from their past experience which would definitely impede their motivational issues as compare to those who don't have any prior distance education experience.

Additional research is needed to investigate cognitive learning strategies along with motivation regulation strategies. Forthcoming research should also compare MRSs at different age levels (young and old) since they could have diverse experiences. We also recommend the future



scholars to capture the quality of MRSs, its application via investigating their actual behaviors. This study did not consider students' age, grades, past achievement, parents' education level or socio-economic status. These variables can moderate the study relationships and will be an exciting addition in the study model because these demographics may also be pertinent for motivation regulation.

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