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# Investigating the Outcomes of Social and Individual Learning by Students' Active Participation in the Learning Management System: A Casual Model

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## Abstract

**Introduction:** Learning Management Systems (LMS) of virtual universities have influenced multiple aspects of students' lives. The present study aimed at investigating the relationship between the application of LMS, learning outcomes, and social learning from the viewpoint of Mehr Alborz University students.

**Methods:** The population of this descriptive, correlational-casual study included 300 students of four different disciplines. According to Krejcie and Morgan's table, a sample of 169 students was selected. The instrument was a researcher-made questionnaire, including 26 questions. To analyze the data, descriptive statistics of Pearson correlation coefficient and structural equation modeling (path diagram) with SPSS 21 and Amos 18 were used.

**Results:** Results indicated that student's engagement in the learning management system was significantly associated with social outcomes ($P < 0.01$), including socialization (0.65) and acculturation (0.47), and learning outcomes, including self-esteem (0.38), students' life satisfaction (0.58), and performance proficiency (0.43). Moreover, the structural model showed that student's LMS engagement had a direct effect on learning outcomes, and helped students acquire socialization and acculturation, both of which indirectly influenced learning outcomes to a great extent (CFI = 0.96, TLI = 0.92, NFI = 0.94, GFI = 0.96, and RMSEA = 0.07).

**Conclusions:** This study presented a new approach for educational institutions to verify the influence of peers. In other words, it provides supportive infrastructures to enable students to work in LMS social networks, and to increase interactions among peers. Furthermore, instructional designers can design educational practices on the basis of learning management systems, and benefit from these systems.

*Keywords:* Learning Management System, Socialization, Acculturation, Self-esteem, Satisfaction, Proficiency

## 1. Introduction

In line with recent growth and spread of information technology and its applications, fundamental changes have occurred. Today, information and communication technology has become a crucial and inseparable part of any educational setting and career, in a way that marketing methods, communication, and learning have been revolutionized. Art and science of education are blended with information and communication technology growth, creating the new learning pathway, known as "E-learning." It covers many educational objectives such as learning at any time from any place, cooperative learning, self-assessment, and management. Educators believe that most associations providing e-learning courses have failed to accomplish learning objectives. Therefore, evaluating and controlling the quality to improve electronic courses (1) and examining the relationship between these courses, and different learning outcomes of learners are of high importance.

Along with the growth of information and communication technology, special online social networks and e-learning sources have been introduced. Revealing the influence of social networks on learning has led to profound improvements of these networks and e-learning. Consequently, virtual universities have been created to benefit from e-learning, using social networks known as learning management system (LMS). The LMS is a software package to manage the electronic content distribution process, which provides enrollment, pedagogical assignments, assessment, online chat rooms, emails, seminars, and forums (2). Alavi and Lindner stated that e-learning takes place in a virtual learning environment, in which interactions of learners with learning material, peers, and teachers are through communication and information technology. Using network infrastructures, learning occurs at any time from any place using different re-

sources (3). Today, social networks and learning management systems in virtual universities provide platforms for people to show their abilities, and experience a different virtual relationship with their friends and families. By using these networks, people have access to various sources of information, and thus promote their knowledge (4). In this paper, researchers attempt to investigate the relationship between LMS application, learning outcomes, and social learning. Learning outcomes have three cognitive, affective, and skill-based dimensions, which include science perception, affective learning, and technical skills (5). Learning outcomes achieved by learners are investigated in pedagogical evaluations. In one study, Kraiger, Ford, and Salas used theories and previous studies, and introduced a multi-dimensional aspect for learning outcomes, which included cognitive, affective, and skill-based dimensions. In this proposed model, the cognitive domain was based on knowledge, and is blended with mental learning. Therefore, cognitive learning outcomes include knowledge, comprehension, and application. An effective domain is based on the attitude towards effective learning, sensitivity, and the ability to cope with different situations. Effective learning outcomes include attitude, life satisfaction, and students' satisfaction of learning. Skill-based domain of learning outcomes includes promoting critical thinking and technical skills to solve problems and to do the assignments (5). In order to investigate the relationship between students' engagement in learning management system and their electronic learning, the researchers of the current study considered three cognitive, effective, and skill-based dimensions of learning outcomes. By surveying three components of students' self-esteem, life satisfaction, and performance proficiency, the relationship between students' LMS engagement and three dimensions of learning outcomes were determined.

The founder of cognitive-social learning theory was the Canadian psychologist Albert Bandura. He called this theory the social learning theory (1977), but, later he re-named it cognitive-social learning (6-8). Bandura's theory was considered to be closely related to behaviorism and cognitive learning theories since it encompassed attention, memory, and motivation, but, as the time passed, it tended to move towards cognitive issues (9). Bandura believed that personal factors such as beliefs, expectations, attitudes, knowledge, etc., and environmental events such as physical and social events, along with individuals' behavior, have a reciprocal influence and that none of which are apart from others as determiners of human behavior. This theory states that people learn by observing others' behavior. According to Bandura's cognitive social learning theory, three elements influence individuals' learning, including individual learners, peers, and the environment. From the cognitive social theory perspective, individual's behavior is the continuous reciprocal interaction of learners with their environment. According to this theory, individuals' self-directed active engagement in learning functions as an initial motive to achieve desirable learning outcomes (7).

As individuals in social networks and university LMS encounter a huge capacity to express themselves, and create different interactions with others without any time and place limitations, they are successful in gaining learning outcomes. On the other hand, individual's interaction with peers and the environment leads to learning outcomes. These relationships are known as socialization and acculturation in the literature.

Socialization includes a satisfactory relationship with peers and adapting to the situation (10). Interacting with peers is an important factor in social learning (11, 12). Meaningful interaction with peers usually takes place in small networks, in which strong relationships, social support, and relevance are established (13, 14). In a small network, people tend to transfer relevant information and social methods between each other, which enable them to understand the interests and specialties, and thus develop common goals.

A network, which motivates individuals' interactions, lets people learn more about their peers, and socialize with them. During the use of online social networks, such as Facebook or LMS, people tend to have powerful relationships with small groups of individuals, even if their friendship domain is wide enough.

Acculturation is related to individuals' perceptions of norms and cultures of the environment (12, 15). Interaction between individuals and the environment constitutes other aspects of social learning. In the pedagogical context, acculturation clearly implies the students' perceptions of cultures, norms, policies, and educational objectives of the university. In order to accomplish acculturation, students are required to search for normal information about their university (15). This kind of information seeking is done through different paths. Previous research on social networks proposed that a network with various members allows access to useful information since diversity leads to knowledge and information transmission (13, 16). It provides a comprehensive view for people to understand different aspects of the environment. As Morrison observed, the width of the network domain with widespread information is useful for people to learn about environmental characteristics such as norms, policies, and cultures. Allen et al. indicated that social communications of university students mostly influenced their commitment and endurance in the university (17).

According to the cognitive social theory, individuals'

active and self-regulated engagement functions as an initial motive to achieve desirable learning outcomes. In learning management systems, students are equipped with extraordinary capacities to establish various relationships by interacting with others at any time and from any place. They can express themselves, and build networks to meet their information needs. In order to acquire learning and respond to these needs, LMS engagement should occur in a way that students voluntarily allocate their time and energy to these sites. People can express themselves in a public profile, and create their own social network. Also, they can develop widespread communication with peers, and continue their communications and increase their selected interactions. Advanced LMS are effective in the spread of people's learning and their information literacy. Indeed, it is the individuals' interaction with peers and the environment that leads to achievement and learning outcomes (6). These interactions are called socialization acculturation in the literature (10, 18).

Through social networks, people develop attitude, behavior, and knowledge to assume a role in the environment, such as LMS in universities and organizations (11, 15, 18). Thus, students' behavior while using LMS has a great potential to improve their level of socialization and social learning in universities, such as socialization and acculturation. Various communications respond to specific learning objectives and individuals' information needs (18).

Students' socialization and acculturation, which form their interaction with peers and the university environment, require various learning subjects and information. Moreover, students' socialization and adaption at the university, influences their performance in the university. Therefore, these two social learning processes bridge the gap between LMS engagement and learning outcomes.

In recent studies conducted on the use of academic social software, it was revealed that using a social network software led to new pedagogical goals such as inventing new learning methods, controlling the learning process by the students, providing transferable skills, supporting individuals' peer training, increasing synergetic learning, creating digital identity, and increasing social interactions (19). Previous investigations showed that university students, who were engaged more in online social networks, had better health, effective development, and more academic accomplishments (20, 21).

Treizman's studies indicated that the time spent with peers by university students profoundly affected their performance (22). Also, Hwang et al. showed that students' social network communication with peers and teachers could be a method for knowledge and information acquisition, and improvement of their performance (23).

Alloway et al. concluded that certain activities on Facebook and YouTube affected the participants' working memory performance. Moreover, active and passive users had different attention control and social network engagement was exploratory, and information acquisition through social networks was validated to be at the same level. Beyond their social communications, the participants showed that their tendency was towards Facebook more than YouTube and Twitter, which was probably due to the ample opportunities for self-expression on Facebook (24).

In their research entitled "The impact of online social networking; A social integration perspective," Tian et al. concluded that online social network engagement influenced the students' social learning; however, the influence on academic learning may be revealed in the long run rather than a short period of time (25). Wang and Chui investigated the success of web 2.0 electronic learning. They showed that traditional electronic learning systems were usually non-interactive communications, in which information was transferred from the teachers to students and not the other way around.

In order to solve this problem, web 2.0 electronic learning system was proposed and a research model was offered, in which commitment tendencies and individual satisfaction were analyzed through communication, information, system, and service quality. Experimental results showed that communication, information, and service quality directly influenced the individuals' satisfaction and commitment. Thereby, individuals were able to share their experiences with others through using the electronic learning systems and receiving feedback from them (26).

In another study, Yan Yu et al. concluded that there was a positive and meaningful relationship between using social networks and learning outcomes. Also, they claimed that social network engagement influenced the individuals' social learning. They showed that social networks could profoundly revolutionize students' learning (27).

Williams and Chinn, in a research entitled "Using web 2.0 to protect active learning experience" concluded that paying attention to students' engagement and active learning strategies in classroom settings is highly important as we face the "network age" students with different expectations and learning styles. In this research, active learning literature and the accuracy of such strategies were created by network age learners. Also, this paper investigated the details of such an experience, and analyzed the challenges and benefits related to the improvement of students' learning. Increased engagement in assignments of students was also analyzed. Moreover, assignments created different opportunities to determine, analyze, and obtain feedback along with the usual communication (28). In

a research conducted by Wan et al. the effect of virtual networks using communication information technology on electronic learning outcomes was investigated (29).

Fich and Arbaugh investigated knowledge structure divisions and group coordination in web-based training MBA courses. The results showed that whenever students used this system to transfer their knowledge, they had a positive attitude towards their training course and tended to engage more in coordinated assignments. The findings indicated that the lack of both factors (group coordination and knowledge structure) had undesirable effects on the students' performance, and that students had better performance in the presence of one of the factors. On the other hand, in the presence of both factors, a synergetic positive influence was not observed. Researchers concluded that the success of web-based training was because of the coordinated learning activities (30).

In a study entitled "In support of Internet: The relationship between internet communication and depression, loneliness, self-esteem, and perceived social support," Shaw and Gant rejected the findings of Kraut et al. that claimed internet engagement results in depression, loneliness, and stress. They analyzed four variables of depression, loneliness, self-esteem, and social support. Their results changed as time passed, and finally they concluded that internet-based courses decreased the students' feelings of loneliness and depression, increasing their self-esteem and social support (31).

In a study entitled "Computer-meditated collaborative learning: An empirical evaluation," Alavi stated that considering the progress speed of different sciences and the necessity of different skills and knowledge in any career, higher education students should be educated more efficiently compared with other students. He stated his aim as going beyond traditional instruction, expanding, and evaluating computer-based educational approaches. His findings showed that learning in group decision marking system resulted in higher levels of skills, self-regulated learning, and assessment in classroom settings in comparison with individual decision making systems. Results also indicated that students in group decision making system obtained higher grades (32).

One of the organizations using LMS to transfer information to students is Mehr Alborz University. Mehr Alborz University is a virtual university, which uses LMS to transfer learning material to the students, creating an environment for students to communicate with teachers and other students, and share their knowledge. Thus, investigating the effects of LMS in this university is highly important. Also, highlighting the relationship between LMS and social learning dimensions, and learning outcomes can increase the efficiency of this university. The aim of the current study was to investigate the relationship between Mehr Alborz LMS and university students' electronic learning through measuring learning outcomes and social learning. The theoretical research model is illustrated in Figure 1. In this study, the researchers attempted to bridge part of the gap in the literature by answering the following questions:

1) Is there any direct and indirect effect between students' LMS engagement and social learning (socialization and acculturation)?

2) Is there any direct and indirect effect between students' LMS engagement and social learning outcomes (self-esteem, life satisfaction, and performance proficiency)?

3) Is there any direct and indirect effect between social learning, LMS engagement, and learning outcomes?

## 2. Methods

The current applied study used a descriptive-survey method and was considered as casual-correlational due to the use of structural equation modeling. The population included 300 students of Mehr Alborz University during years 2011 and 2012 from 4 different disciplines. The sample included 169 students according to Kreijsie and Morgan's table, and was chosen by simple random sampling in the form of a lottery. Considering the nature of the research questions and hypotheses, a questionnaire was used to collect the data. To study the related literature, pedagogical and psychological books as well as previous research and surveys were used. The questionnaire used in this study was designed by considering different research components in previous studies and questionnaires. The learning management system was obtained from Elison et al. and Steinfield et al. socialization from Marrison, Pascarella, and Terenzini, acculturation from Yan Yue et al. self- esteem from Rosenberg and Steinfield et al., life satisfaction from Piode et al. and Steinfield et al. and performance proficiency from Chao et al. (11, 18, 21, 27, 33-36). To ensure the content validity, the theoretical foundations of each component were identified, and similar questionnaires were studied in several studies, books, national, and international journals. Our main aim was to choose standard questions from previous studies. Also, 6 psychology and education management professors' opinions were applied. The questionnaire included 26 items with five-point Likert scale, measuring the predicting variables and the specified learning outcomes. After designing the questionnaire and assuring its reliability by the experts in the field, the questionnaire was created in an electronic form at Google Docs, and then its link was sent to the samples, and 144 acceptable answers were received and

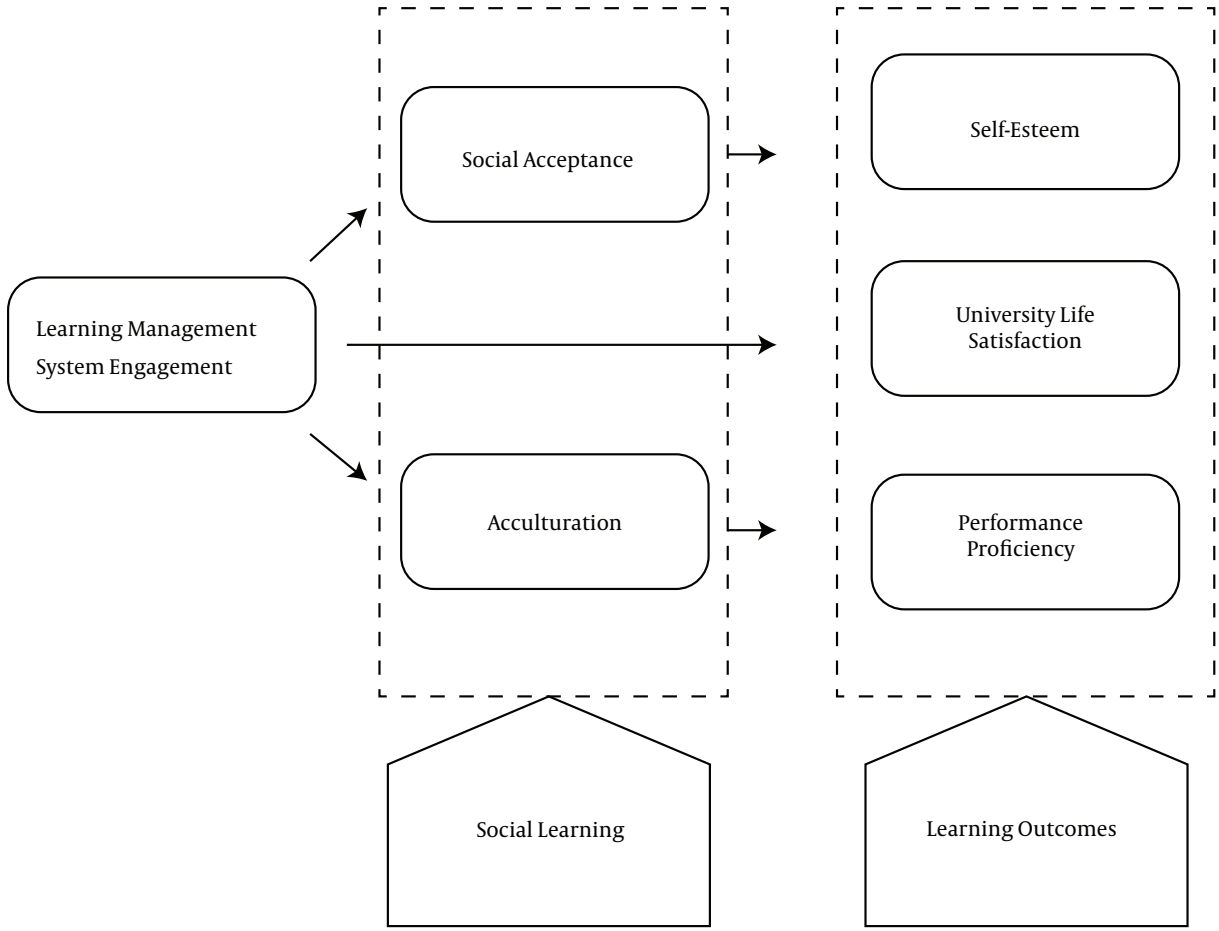


**Figure 1.** The Conceptual Model

analyzed. The inclusion criterion was being a virtual student of higher education at Mehr Alborz. The exclusion criterion was providing inadequate information for the analysis such as marking none of the options or marking more than one option in each question. Alpha coefficient was 0.904 for the entire questionnaire, 0.721 for LMS engagement, 0.719 for socialization, 0.716 for acculturation, 0.761 for self-esteem, 0.804 for life satisfaction, and 0.65 for performance proficiency. In order to analyze the data, descriptive statistics (average, standard deviation, percentage, and frequency) and for inferential statistic (Pearson correlation and structural equation modeling) were used by SPSS and Amos software. Also, significance level for statistical tests was considered as 0.05.

## 3. Results

Before analyzing the research questions, some descriptive statistics, including participants level (junior, sophomore, and senior), gender (male or female), major (Master of business administration (MBA), information technology (IT), industrial management (IM), and project management (PM)) and age range was measured. Overall, 75.7% (109 students) of the participants were 20 to 30 years old, 22.9% (33 students) were in the age group of 31 to 40, and 1.4% (2 students) were 41 to 50 years old. Considering gender, 54.2% (78 students) were male and 45.8% (66 students) female. Considering study level, 19.4% (28 students) were seniors, 35.4% (51 students) were sophomores, and 45.1% (65 students) were juniors. Finally, 47.9% majored in MBA, 14.6% in project management, 83% in industrial management, and 29.2% in information technology management.

Considering that first and second research questions investigated the relationship among LMS engagement, social learning (socialization and acculturation), and learning outcomes (self-esteem, life satisfaction, and performance proficiency), descriptive statistics of research vari-

ables such as mean, standard deviation, and correlation are indicated in Table 1.

Table 1 indicates the mean and standard deviation of LMS engagement variables. There was a meaningful and acceptable relationship among students' LMS engagement, social learning, and learning outcomes.

In order to investigate the third research question, concerned with whether there was a non-directional effect of students' social learning on LMS engagement, and learning outcomes, and examine the fitness of the conceptual model and provide a casual model, the Amos software was used to perform path analysis.

As shown in Table 2, the results are provided in two models. In model 1 (based on the conceptual model, (Figure 1), data fitness was less than meaningful, and acceptable in normalized chi-square indices (CMIN/DF) and the root of mean square error of approximation (RMSEA). It is not uncommon for the model not to meet enough fitness; thus, the researchers made modification attempts. To this end, some meaningless paths were omitted, and data analysis was repeated. In the above by by comparing fitness indices of the modified model with those of the first one, proportional improvement in absolute, comparative, and parsimony fitness indices was observed, and considering Brown's and Kline's Criteria, the modified structural research model found appropriate fitness with the experimental data (37, 38). Finally, Table 2 shows the final structural model after applying the modifications.

As Figure 2 indicates, the results of path analysis showed that the students' LMS engagement influenced their self-esteem ($\beta$ = 0.18), life satisfaction ($\beta$ = 0.27), and performance proficiency ($\beta$ = 0.24), both of which were meaningful (P = 0.032). Also, socialization meaningfully accounted for life satisfaction ($\beta$ = 0.29) and performance proficiency ($\beta$ = 0.29), (P = 0.029), while it did not account for self-esteem with $\beta$ = 0.09 (P = 0.014), and acculturation meaningfully (P = 0.048) accounted for self-esteem ($\beta$ = 0.31). Table 3 indicates direct and indirect effects of LMS engagement on social learning and learning outcomes.

As it is discernible from the above table, LMS was able to account for the changes in self-esteem (21%), life satisfaction (22%), and performance proficiency (19%), considering socialization and acculturation as the mediators.

## 4. Discussion and Conclusion

This study was conducted to investigate the effects of learning management systems on learning outcomes and social learning. The findings indicated that learning management system engagement, social learning (socialization and acculturation) and learning outcomes (self-esteem, life satisfaction, and performance proficiency) were positively and meaningfully related to each other. Furthermore, social outcomes (socialization and acculturation) were related to learning outcomes (self-esteem, life satisfaction, and performance proficiency) in a positive and meaningful manner. These findings chime with those obtained from the following studies: Tian et al. Yan Yue et al. Wan et al. Steinfield et al. Hwang et al. Morrow, Chao et al. Treizman, Morrison, Coleman, Podolny et al. Thomas, and Tinto (11, 13-15, 19-23, 25, 27, 29, 39, 40). Therefore, LMS engagement behavior had a huge potential to improve the level of social learning of universities, especially in socialization and acculturation. It provides various relationships, special learning objectives, and meets the need for information (18). Socialization and acculturation of university students forms their interaction with peers and the environment. Generally, it requires several learning subjects and information. Moreover, socialization and adaptation of a student in the university setting influences their performance. Thus, the two processes of social learning basically created a bridge between LMS engagement and learning outcomes.

Results of the causal research model showed that LMS can present learning outcomes and students' learning while social outcomes could be represented as mediators in the relationship between LMS engagement and learning outcomes. Another finding of the model was that socialization accounted for life satisfaction and performance proficiency, but it could not meaningfully account for self-esteem. On the other hand, acculturation was meaningfully able to account for the students' self-esteem.

Results of this study indicated that LMS guided the students throughout the path of psychological growth and health, and had positive effects on social learning dimensions. Learning Management Systems engagement not only expands the students' network capacity in universities, but also it helps students make close relationships with friends within small groups.

To sum up, this study revealed a fundamental mechanism for online social networks to follow in order to influence learning outcomes. Beyond the direct relationship between LMS and social learning outcomes, and the mediator role of the two social learning processes (socialization and acculturation) and bridging the gap between LMS and learning outcomes, it is assumed that these two processes establish the students' interactions with peers and the environment. These interactions are important for students, especially for freshmen to express their roles at universities. Socialization and adaptation determine the students' performance and how they remain committed to their universities. Learning management systems alleviate the embarrassment element in face to face interactions, and help students feel relaxed while expressing themselves and in-

**Table 1.** Mean, Standard Deviation, Pearson Correlation for the Research Variables

| Variables | Mean ± SD | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| **LMS Engagement** | 2.21 ± 0.69 | 1 | | | | |
| **Socialization** | 2.36 ± 0.75 | 0.65** | 1 | | | |
| **Acculturation** | 2.5 ± 0.84 | 0.47** | 0.43** | 1 | | |
| **Self-esteem** | 2.09 ± 0.68 | 0.38** | 0.34** | 0.43** | 1 | |
| **Life Satisfaction** | 2.56 ± 0.85 | 0.58** | 0.55** | 0.36** | 0.28** | 1 |
| **Performance Proficiency** | 2.53 ± 0.76 | 0.43** | 0.46** | 0.23** | 0.1 | 0.48** |

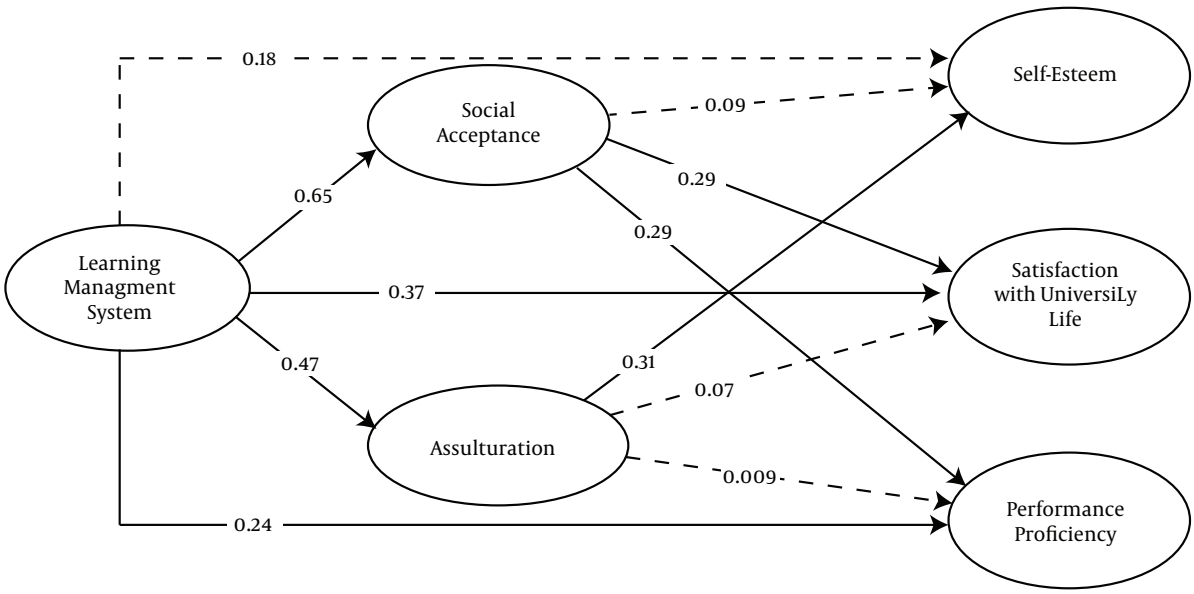


**Figure 2.** Final Research Model

**Table 2.** Structural Fit Index of Learning Management Systems, Learning Outcomes, and Social Learning

| Indexes | Model 1 | Model 2 |
|---|---|---|
| **Comparative Fit Index (CFI)** | 0.94 | 0.96 |
| **Tucker-Lewis index (TLI)** | 0.80 | 0.92 |
| **Normed Fix Index (NFI)** | 0.93 | 0.94 |
| **Goodness-of-Fit Index (GFI)** | 0.96 | 0.96 |
| **The Root Mean Square Error of Approximation (RMSEA)** | 0.15 | 0.07 |
| **Normed Chi-Square** | 4.44 | 2.40 |

teracting with peers and teachers.

This is specifically useful for students, who move from the marginal regions of the society to the central parts. Previous studies of LMS and social networks mostly focused on structure description or typology of the network, ignoring the potential process of the change and transmission. The findings of this study indicated that socialization and acculturation connected the individual's online social network behavior to positive social learning outcomes, and consequently enriched the studies of social networks and social learning, expanding the application of these studies in web-based instruction. In practice, social dimension of learning has always emphasized the role of individual learners and educational institutions. In this internet era, social behavior of human beings is constantly changing. Also, most universities are experiencing economic and social changes as a result of the modern information technologies.

From the students' point of view, positive effects of

**Table 3.** Direct and Indirect Effects of the Research Variables

| Independent Variable | Direct Effect | Indirect Effect | Total Effects |
|---|---|---|---|
| **Predicting Variable: Self-esteem** | | | |
| LMS Engagement | 0.18 | 0.21 | 0.38 |
| Socialization | 0.09 | | 0.09 |
| Acculturation | 0.31 | | 0.31 |
| **Predicting Variable: Life Satisfaction** | | | |
| LMS Engagement | 0.37 | 0.22 | 0.58 |
| Socialization | 0.29 | | 0.29 |
| Acculturation | 0.07 | | 0.08 |
| **Predicting Variable: Performance Proficiency** | | | |
| LMS Engagement | 0.24 | 0.19 | 0.43 |
| Socialization | 0.29 | | 0.29 |
| Acculturation | -0.009 | | -0.009 |

LMS on their socialization processes in universities and final outcomes of learning are evident. Students are swamped with these new methods based on the web 2.0 technologies. The findings indicated that LMS engagement enhanced the students' self-esteem, life satisfaction, and performance proficiency. From a pedagogical perspective, self-initiated learning is an appropriate method for students, that parts of such learning methods could be used in LMS activities. The results of this study highlighted the peer power in social aspects of individual learning. Peer interactions are able to promote self-initiated networks towards individuals' psychological growth, and thus influence the individuals' self-esteem.

Considering the role of peers in various forms of learning, some studies proposed practices such as peer guidance (Sanchez et al.) and peer training (41, 42). This paper provided a new approach for pedagogical institutions to admit the peer influence. In other words, it provided supportive substructures in a way that students could perform social network activities in LMS, and improve their own interactions. Also, it enables pedagogical designers to design new educational practices based on LMS, and to use previously stated benefits of this system.

Findings of this study and similar studies showed the positive aspects of social network usage such as LMS, which helps students gain positive results in their personal and social learning. However, it does not necessarily mean that individuals are supposed to allocate most of their time to online social networks. Despite their positive effects on students' progress, these networks have some negative outcomes, which should be investigated in future research. It is worth mentioning that to succeed in social learning networks, appropriate social network structures are required. Different sociological and psychological factors can influence relationships in social networks such as LMS and students' learning outcomes, which can be accounted for in future studies. Researchers of this paper attempted to investigate LMS engagement in Mehr Alborz University. Other researchers can work on the relationship between other social networks (e.g., Facebook, Telegram, etc.) and personal, and social outcomes of the students' learning in future studies.

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## Footnotes

**Authors' Contribution:** Dr. Peyman Yarmohamadzadeh was the research supervisor and research methodologist, and model designer, Ali Jabbarianpour was the proposal writer, and conducted the research, and data collection, and Ayoub Feizy performed the analysis and data interpretation, and article writing.

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