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## Self-Determination Theory: Opportunities and Challenges for Blended e-Learning in Motivating Egyptian Learners

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### Abstract

Learner motivation is considered an important premise for the BL method. A self-administered questionnaire was used to collect data from 616 undergraduate learners who were geographically widely spread around the Colleges of International Transport and Logistics (CILT) at the Arab Academy for Science, Technology and Maritime Transport (AAST&MT) in Egypt. Respondents were drawn from three branches in Greater Cairo, Alexandria, and Port Said. The data was analysed using SPSS<sup>22</sup> and AMOS<sup>18</sup>. This paper contributes to the application of Self-Determination Theory (SDT) within the field of Blended e-Learning (BL) through an analysis of the views of learners towards the opportunities and challenges that BL offers to Logistics Education (LE) in Egypt.

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*Keywords:* Blended e-Learning; Self-Determination Theory; Intrinsic Motivation; Extrinsic Motivation; Amotivation; Autonomy; Competence; Relatedness.

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### 1. Introduction

Due to the rapid growth of technology, the internet infrastructure has become incorporated into many learning environments, including Blended e-Learning (BL), which leads to changes in instructional practices, such as the Traditional Face-to-Face Learning (TF2FL) environment (Romano et al., 2005). Motivation has emerged as a vital aspect of the educational system. BL provides learners with multiple opportunities in enhancing and motivating

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their future learning, and sometimes it is considered as alternative learning. Future learning refers to the use of interactive technology tools within the learning environment. BL has become an accepted learning method for Higher Education (HE). Artino and Stephens (2009) stated that academic motivation refers to motivated learners engaging in the learning process, exhibited by low latency and high perseverance with respect to task engagement. SDT is a broad framework for human motivation. BL improves learners' academic performance both internally and externally. Motivating learners internally refers to Intrinsic Motivation (IM), while externally refers to Extrinsic Motivation (EM). However, up to now, there is limited research about the opportunities and challenges of BL in motivating learners in HE. Therefore, researchers must pay full attention to identifying the right opportunities and challenges of BL. Finally, there has so far been no attention given to the issue of BL from logistics educators, especially concerning learners' perspectives.

### *1.1. Self-Determination Theory*

Self-Determination Theory (SDT) is a rapidly growing theory of motivation in the academic literature. SDT is a theory of human motivation that addresses individuals' initiation of behaviour (Grolnick, 2015, p.65). Historically, in the late 1960s, the SDT framework was recognized by Edward Deci and he discovered several factors that can undermine the concept of IM, for example, the types of performance-contingent rewards, time pressures, threats of punishment, and certain types of competition (Sheldon et al., 2003). During the beginning of the 1970s, research on intrinsic and extrinsic motivations appeared. Researchers looked at the effects of rewards on situational behaviour IM (Vallerand, 2004). Subsequently, the past forty years have seen increasingly rapid development in SDT following the seminal work of Edward Deci and Richard Ryan (1985). SDT is meta-theory of motivation that assumes individual behaviour is an active organism which is determined by three universal Basic Psychological Human Innate Needs (BPHIN). First, the need for autonomy means individuals who take their own options, and experience free choice. Second, Ntoumanis and Standge (2009) state that competence is felt in producing and bringing about desired outcomes. Third, Nukta et al. (2011) have classified relatedness as the way of experiencing and feeling mutual respect among peers for the purpose of meaningful relationships with others.

SDT distinguishes between different types of motivation and Ryan and Deci (2000) classified these as Amotivation (AM), Extrinsic Motivation (EM) and Intrinsic Motivation (IM). IM is to perform an activity for its own sake, which refers to the individual experiencing the pleasure, interest, enjoyment and satisfaction inherent in the tasks (Deci, Connell, & Ryan, 1989). EM refers to a wide variety of individual behaviours that are engaged in as a means to an end and not for their own sake (Deci, 1975). For example, learners are willing to acquire information and knowledge in order to obtain higher or better reward, as grades (Breen & Lindsay, 1999). EM is broken into four subtypes: integrated, identified, introjected and external regulations. First, the highest self-determination is the integrated regulation. It takes place when a person engages in an activity because it has been "fully incorporated into the self" (Dyrlund & Wininger, 2007). Second, identified regulation is when an individual is doing something because it is in accordance with one's identity (Gillard et al., 2007). Third, introjected regulation means when an individual is doing something to avoid negative feelings or to attain high self-esteem (Vlachopoulos et al., 2013). Fourth, external regulation depends on external contingencies, for example, to attain a reward or avoid negative feedback (Müller & Palekčić, 2005). Finally, AM refers to non-self determination, and it results from not valuing a task (Ryan et al., 2006). Deci and Ryan (2002) identified that AM is individual behaviour acting through the motions with no intention to do what one does. For example, learners who are suffering lack of intention to engage into the learning process due to lack of teaching materials.

### *1.2. Self-Determination Theory in Education*

Recent developments in "SDT" have proven its use in the educational setting. The SDT framework has been applied at schools, colleges and universities for measuring the effect of motivation on learners and instructors. Gillet et al. (2012) pointed out that there is a rapid growth in research which has documented the role of IM and EM in educational outcomes. Different research methods have been used to examine the capability of learners and instructors, which were extrinsically and/or intrinsically motivated or amotivated by academic outcome

performance. Therefore, Ryan and Weinstein (2009) asserted that SDT promotes learners' interests in the learning environment as well as the growth in competencies and improved outcome performance.

The advances in technology usage has supported education in benefiting Virtual Learning (VL) activities for learners and instructors, and it has led to an increase in learners' and instructors' levels of motivation. Researchers have used video games to support and enhance learning performance and motivation for learners (Rigby & Przybylski, 2009). Nevertheless, Kraut et al. (1998) have stated that the use of technology could cause barriers for participants, for example, excessive amounts of time spent virtually, feeling that the world outside of the internet is boring, compulsive use of the internet, difficulty in managing the time spent on the internet, becoming irritated if disturbed while online and decreased social interaction and face-to-face communication. But these barriers are not common for everyone, as there are other technology users benefiting from it, and they do not see and experience these barriers. The literature on IM has shown that it is often used to explore learners' reasons for engagement in VL (Xie, DeBacker, & Ferguson, 2006). IM sometimes is more preferable than EM in the VL context. IM is related to individual behavioural persistence (Schneider & Kwan, 2013). But still, Ryan and Stiller (1991) pointed out that IM is an essential phenomenon for educators, a natural wellspring of learning and accomplishment that can be thoroughly categorized.

## **2. Blended e-Learning**

The Blended e-Learning (BL) method is becoming increasingly popular in the educational environment (Kim et al., 2013). It is a successful learning method in different fields of education and it has become a widespread concept adopted worldwide. In the late 1980s, BL started to gain its popularity with e-Learning (EL); this was due to the industry's beliefs that mass produced resource content materials would replace all other traditional forms of training programmes (Ireland et al., 2009). As stated by Riffell and Sibley (2005), there have been potential disadvantages in using the pure EL method. Therefore, there has been an increasing interest in the BL method in which the TF2FL classroom environment has blended in various combinations of virtual support media tools (Fleck, 2012), such as asynchronous and synchronous technology tools. On the other hand, Pahinis et al. (2007) argued that there are few research studies in the BL method available in the literature. Oliver and Trigwell (2005) classified BL method as an integrated mixture of both learning methods, such as TF2FL, with the web-based VL methods.

### *2.1. Opportunities and Challenges to Blended e-Learning Adoption in the Middle East*

Given the opportunities and challenges, BL is often considered the best option among different participants including learners and instructors. The BL concept provides the opportunity to integrate the advances offered by a virtual learning environment (VLE) with the best practices and benefits of the TF2FL classroom environment (Tselios et al., 2011). Research has explored several opportunities and challenges in adapting BL among different Arabic countries. In the beginning of 2001, the Arab Information Technology Union (AITU) recognized the development of the Information and Communication Technology (ICT) industry in Egypt, Emirates, Syria, Saudi Arabia, Morocco, Jordan, Kuwait, and Palestine, and the involvement of several ICT industrial companies (Sayed & Westrup, 2003). In 2008, Qatari universities enhanced ICT in their educational system (Hassan & Fook, 2012). The study of Makhdoom et al. (2013) underlined the benefits of BL, which are enhancing perceptions of the educational environment, problem solving, critical thinking, decision-making skills and clinical skills, and knowledge gain by standardizing. Wu and Huang (2013) pointed out that the advantages of the use of VL tools are improvements in learners' attitude, instructor-learner interaction, student learning experience, and individual learner's learning flexibility. BL method is recognized as the educational method of accessing daily knowledge and information content, social interaction, personal agency, cost effectiveness and ease of revision (Osguthorpe & Graham, 2003). On the other hand, there are some challenges that might be revealed in order to adapt the BL concept. In research on Saudi Arabia, Alebaikan and Troudi (2010) identified three challenges that Saudi universities may face when adapting BL including the culture, finding the right design, and demands on time. In this study, these opportunities and challenges have been demonstrated from the SDT framework of Deci and Ryan. It means that the opportunities

for BL from learners' perspectives are divided into intrinsic and extrinsic motivations, while the challenges include AM.

### *2.1. Blended e-Learning in Egypt*

The Egyptian government promotes ICT in education as it helps to improve the instructors' and learners' ways of motivation. In Egypt, EL denotes significant growth in the application of technology to facilitate the participants such as learners (Hegazy & Radwan, 2010). Since 1985, Egypt as a developing country has invested in constructing its ICT infrastructure (Kamel & Hussein, 2002). Egypt has thirty-two universities, twenty-two government and ten private universities (El-Seoud et al., 2014). However, these universities are not enough to serve all the Egyptian population. The internet users are rapidly growing, including access for 35% of population in Egypt, however, the bandwidth in most places is still less than 2 Mb/s (Ayad, 2013). Internet access has been available to the public in Egypt since 1993 when there were approximately 2,000 internet users (Kamel, 1998), while Saudi Arabia started in 1999 with 200,000 users (Alebaikan & Troudi, 2010). The Egyptian Ministry Of Education (MOE) encourages the development of a VLE. In 2008, the Egyptian government established plans for the infrastructure required for enhancing EL, including: providing universities with high-speed internet networks; establishing video conference amenities linking all the universities; piloting the wireless campus; supplying 52 labs in Helwan University as a pilot model (20 learners/computer); establishing an e-content development lab in each university for helping staff produce EL materials; training both staff and administrators to use information technology efficiently; and inviting world class specialists and local experts to check the current availability to ensure that technical materials are sufficient, efficient and in place (MCIT, 2010). Afifi (2011) pointed out that Egyptian universities are facing some opportunities regarding EL method namely, easing the overloaded classes in the Egyptian universities, flexibility in respect of time of learning, enhancing the students' ability regarding acquiring knowledge by themselves, improving information retention, delivering education for local students in remote areas, increasing the number of enrolled international students, reducing costs of education per student and serving students with special needs. On the other hand, the study by Adams and Seagren (2004), cited in Mohammad (2008), stated that Egyptian universities should realize that VL will: offer less limitation in time and space compared to traditional offline classes; expand an institution's geographical reach; give the possibility of providing multiple learning practices based on self-regulated learning for adults; improve educational quality; provide interactivity in the process of communication; increase efficiency for institutions and for students and achieve customer satisfaction and cost effectiveness compared to traditional classroom-based teaching and learning. Nevertheless, in the VLE, learners' motivation has recently received little attention in Egypt. Therefore, there is a need to overcome the barriers of VL to be able to adopt this concept.

## **3. Method**

### *3.1. Data Collection*

This research study conducted self-administered questionnaires distributed in a classroom environment. Respondents were from three branches in the CILT, AAST&MT located in Egypt: Greater Cairo, Alexandria and Port Said. The anonymous questionnaires were conducted in English as all learners were registered on logistics undergraduate programmes delivered in English at the CILT, AAST&MT. Data were collected in the Fall Semester 2012-2013. This case study examines Egyptian undergraduates' IM, EM, AM, Autonomy, Competence and Relatedness with respect to the acceptance of the BL concept. Data was coded and fed into Statistical Package for the Social Sciences (SPSS<sup>22</sup>) and Analysis of Moment Structure (AMOS<sup>18</sup>) for data analysis. Confirmatory Factor Analysis (CFA) was used to confirm the dimensions under study are verified by SDT. In addition, Structural Equation Modeling (SEM) was applied to find the effect of the above-mentioned theory on logistics learners' motivation.

### 3.2. Participants

Pilot testing was carried out on a sample of 70 learners resulting to a small number of amendments and clarification in the questions asked. The survey was then administered to a total of 616 undergraduate logistics learners at different branches of AAST&MT and in differing year groups. Among the respondents who participated in this survey, 81.2% (n=500) of them were from Greater Cairo, 14.9% (n=92) were from Alexandria and 3.9% (n=24) were from Port Said. 72.2% (n=445) were male and 27.8% (n=171) were female. In the terms of age range, approximately 25.2% (n=155) of the respondents were under 18 years, 67.7% (n=417) were 18-22 years of age, 6.5% (n= 40) were 23-25 years of age, and 0.6% (n=4) were above 26 years of age.

### 4. Results and Discussion

BL helps to enhance learners' perceptions of the educational setting. This section presents an empirical study for the current research through displaying statistical analysis and the findings of the studied sample of learners in the CITL at AAST&MT. All items having an alpha coefficient greater than 0.7 are considered as reliable items (Hair et al., 2009). The loadings of items for each of the variables under study exceed 0.60. The internal reliability of the IM scale was  $\alpha$  0.968 out of 53 items; the EM scale was  $\alpha$  0.949 out of 19 items, the AM scale was  $\alpha$  0.919 out of 24 items, Autonomy scale was  $\alpha$  0.918 out of 4 items, Competence scale was  $\alpha$  0.900 out of 3 items and relatedness scales was  $\alpha$  0.907 out of 3 items. It can be noticed that Cronbach's Alpha for all items under study is greater than 0.7. The study indicates adequate convergent validity for the variables under study, whose IM scale was 0.984, EM scale was 0.976, AM scale was 0.959, Autonomy scale was 0.958, Competence scale was 0.949 and Relatedness was 0.907. Cronbach Alphas for all the sub-variables ranged from 0.967 (social Interaction/ IM) to 0.885 (Lack of Technical and Facilities Support/ AM). Finally, the total reliability scale was 0.978 out of 106 items, and the validity scale was 0.989. Typically, data analysis is performed by applying CFA using the AMOS<sup>18</sup> statistical package. Based on the acceptance of the SEM complete model, the researcher can depend on it to test the relationships between variables under study using SEM estimates, which display the model fit indicators of the SEM in Table 1. The researcher employed a CFA to test the factors that could be included in the dimensions IM, EM, and AM. CFA is a type of SEM that deals specifically with measuring models, that is, the relationship between observed measures or indicators and latent variables. Table 1 displays the model fit indicators of CFA which have the minimum discrepancy (CMIN)=1.928,  $p$ -Value < .00, Goodness of Fit Index (GFI)=0.935, Comparative Fit Index (CFI)=0.971, Incremental Fit Index (IFI)=0.971, Tucker-Lewis Index (TLI)=0.967, Root Mean Square of Approximation (RMSEA)=0.039, and Root Mean Square Residual (RMR)=0.036. It was found that the values of the below mentioned indicators are acceptable, which means that all the divisions' estimated dimensions fit.

Table 1. Some Fit Measures of the Overall Structured Model.

Measure	Model Results	Threshold
Chi-square/df (cmin/df)	1.928	< 3 good; < 5 sometimes permissible
p-value for the model	0.000	< 0.05
GFI	0.935	> 0.95
AGFI	0.920	> 0.80
NFI	0.941	> 0.90
TLI	0.967	> 0.95
IFI	0.971	> 0.95
CFI	0.971	> 0.95 great; > 0.90 traditional; > 0.80 sometimes permissible
RMR	0.036	< 0.09
RMSEA	0.039	< 0.05 good; 0.05-0.10 moderate; > 0.10 bad
PCLOSE	0.999	> 0.05

The researcher applied a SEM using AMOS<sup>18</sup> to build a model with the relations between autonomy, competence, and relatedness with different types of motivations under study. The analysis aims to provide a study of the autonomy, competence and relatedness with the relation with IM, EM, and AM for learners in the sample under study and define the factors that represent each of the below mentioned dimensions. The diagram of CFA uses AMOS for reflective variables. Cost Effectiveness and Attendance Issues from the dimension “IM” improve the model fit, as the variables removed has negative covariance with other variables. Resistance to Change and Lack of Technological Skills are deleted from the dimension AM due to their high negative covariance which let them be statistically rejected. On the other hand, the researcher did not delete any of the sub- dimensions proposed for EM. Regarding BPHIN, it was found that only one statement was deleted in the relatedness dimension, which was the first statement. Table 2 shows the estimates of the CFA and their significance level. It can be observed that the estimates after deleting the above-mentioned variables are all have a 0.05 significance level. Observing Table 2, it can be noticed that there is a significant effect of Autonomy in IM, EM, and AM ( $\rho$ -value < 0.05). This means that the alternative hypotheses of H<sub>1</sub>, H<sub>2</sub>, H<sub>3</sub> are accepted. Also, there is a significant effect of competence only on EM ( $\rho$ -value < 0.05), while the effect on IM and AM were shown to be insignificant, indicating that the alternative hypothesis of H<sub>5</sub> is accepted, while H<sub>4</sub> and H<sub>6</sub> are rejected. Finally, there is a significant effect of relatedness on IM, EM, and AM ( $\rho$ -value < 0.05). Therefore, the alternative hypotheses of H<sub>7</sub>, H<sub>8</sub>, H<sub>9</sub> are accepted.

Table 2. Some Fit Measures of the Overall Structured Model.

Hypothesis	Path		Est.	S.E.	C.R.	$\rho$	Results	
H <sub>1</sub> : Autonomy significantly affects Intrinsic Motivation	Intrinsic Motivation	<---	Autonomy	.494	.080	6.149	***	Accepted
H <sub>2</sub> : Autonomy significantly affects Extrinsic Motivation	Extrinsic Motivation	<---	Autonomy	.384	.083	4.630	***	Accepted
H <sub>3</sub> : Autonomy is significantly affects Amotivation	Amotivation	<---	Autonomy	.342	.118	2.910	.004	Accepted
H <sub>4</sub> : Competence is significantly affects Intrinsic Motivation	Intrinsic Motivation	<---	Competence	.110	.084	1.311	.190	Rejected
H <sub>5</sub> : Competence is significantly affects Extrinsic Motivation	Extrinsic Motivation	<---	Competence	.202	.095	2.123	.034	Accepted
H <sub>6</sub> : Competence is significantly affects Amotivation	Amotivation	<---	Competence	-.014	.133	-.102	.918	Rejected
H <sub>7</sub> : Relatedness is significantly affects Intrinsic Motivation	Intrinsic Motivation	<---	Relatedness	.131	.036	3.588	***	Accepted
H <sub>8</sub> : Relatedness is significantly affects Extrinsic Motivation	Extrinsic Motivation	<---	Relatedness	.223	.041	5.374	***	Accepted
H <sub>9</sub> : Relatedness is significantly affects Amotivation	Amotivation	<---	Relatedness	.212	.059	3.584	***	Accepted

Note: Est.= Estimate; S.E= Standard Error; C.R= Critical Ratio;  $\rho$ =  $\rho$ -value.

The purpose of this study was to examine the applicability of SDT to explain the relationship between the three BPHIN and the types of motivation in the acceptance of the opportunities and challenges of BL. The results were successful in the way they motivated learners. They also lead to an effective learning environment. This current study proves that there is a significant effect of autonomy on IM. This result was expected, as it was observed that the need for autonomy is achieved when learners have the opportunities of freedom of choice in using and interacting with VL activities. This also indicates that learners have chances to increase their pleasure and happiness. For example, learners who use BL have an opportunity of selecting different learning media tools, such as synchronous and/or asynchronous distance tools, as well as the TF2FL method. Moreover, this study documented that there are several opportunities for the BL method, which showed learners are intrinsically motivated by greater flexibility in access, social interaction, feedback and assessment, time management, learning style, ease of use, general awareness, geographical audience and learning experience in teaching and learning.

These are considered to be part of IM sub-dimensions. These IM opportunities would assist learners as it helps them to effectively engage in learning and have better learning outcomes' performance. Regarding EM, it was observed that there is a significant effect on Autonomy. This result was also predicted, as learners prefer to achieve tangible rewards; they are strongly motivated to engage in the VL setting. In addition, integrated, identified, introjected and integrated regulations have proven the in level of enjoyment in engaging learners, which were related to the EM dimension. Checking the effect of autonomy, it was observed that it has a significant effect on AM. This result was surprising, as this relation was shown to have an insignificant effect in previous studies. However, observing the sample under study, the researcher found that learners are adapting to the barriers of the BL method, as it is not affecting their freedom of choice in the VL setting. Learners are amotivated by lack of technological infrastructure, isolation and lack of social interaction, lack of technical and facilities support, and lack of social awareness, which were related to the AM dimension. In the Middle East, learners have adapted and are aware of some of the barriers of BL and EL, such as technological infrastructure, technical and facilities support and social awareness (Kamel & Hussein, 2002). In addition, other noticeable challenges of BL include isolation and lack of social interaction and technological infrastructure between learners and instructors. When discussing competence, it was observed that there is an insignificant effect of the latter variable on IM, as well as on AM. This result contradicts previous studies, as it was found that there is always a significant effect of competence on IM and EM, especially when the study has a significant relationship with autonomy. Based on deCharms (1968) claims that EM has typically been characterized as a pale and impoverished form of motivation that contrasts with IM. As mentioned by Ryan (1982), increases in perceived competence do not result in increased IM if people do not have a sense of autonomy. This contradiction may be attributed to the nature of the VL setting in Egypt. The results of our study showed another significant effect of BL in other learning domains. Until now, there is a lack of design and work experience by instructors and institutions in designing suitable BL for our learners. This would enable the learners to feel competent in engaging with learning materials and their sources, but at present, there is a shortfall in their desired BL outcomes. On the other hand, the effect of competence on EM was shown to have a significant effect. This result could be due to the nature of EM, as it includes tangible rewards, such as higher grades and scholarship. It shows that learners wish to reach their desired outcomes and could continue using VL, but it needs to be engaged with tangible rewards. These results mean that learners do not believe that IM and AM would increase the preferred outcomes in the learning process. For example, learners' needs for competence would not increase or decrease their wish to engage and reach the right learning outcomes, as well as, it would not effect a lack of intention to interact in the learning process. In addition, the current study proves that there is a significant effect of relatedness on IM. Relatedness also was found to be significantly affecting EM giving a chance for the learner to engage with learning to identify a reason. It also suggested the learners may be convinced with learning subjects, as they know the reward behind it. They will get benefits like higher grades and avoid any shame of not engaging in activities. Finally, it was found that there is a significant effect of relatedness on AM. For example, BL has proven that there is a lack of personal interaction between learners and instructors. This means that relatedness will affect social interaction and technological infrastructure, as well as technical and facilities support and social awareness, in an inverse way. In addition, BL is an established and enhanced learning method in CITL; it should not replace TF2FL method, which is why BL is probably a better method than pure EL. This result coincides with that of other researchers who proved that learners using the BL method with the use of more asynchronous learning tools will face isolation, a lack of social interaction and social awareness, and other results of AM (Kamel & Hussein, 2002).

## 5. Conclusion and Recommendations

Nowadays, BL is one learning method that plays an effective role in the virtual educational system. This study examined the implementation of learner motivation on the opportunities and challenges of the BL method. It develops the opportunities as well as the challenges of BL, whose opportunities were classified into intrinsic and extrinsic motivations. Furthermore, challenges facing learners are referred to as AM. The study found a significant and mutually causal relationship between learners' types of motivation and the three BPHIN. The results showed that competence has no impact on IM and AM dimensions. This means competence is not affecting the learners motivation in accepting the BL concept, however, it showed that competence has an effect on EM. Finally, the

study showed the various opportunities and challenges of utilising the BL method from the perspective of Egyptian learners.

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