The Application of Self-Determination Theory on the Opportunities and Challenges for Blended e-Learning in Motivating Egyptian Logistics Learners

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Abstract

Nowadays, there is a movement towards a Blended e-Learning (BL) method, consisting of a mixture of virtual learning and Traditional Face-to-Face Learning (TF2FL) methods. BL is the integrated mixture of multiple methods of learning and the blending of virtual and physical resources (Kilkelly, 2009). This present study investigates the learners' perspective of the opportunities and challenges of BL according to the Self-Determination Theory (SDT) framework of Deci and Ryan (1985). It also categorises the opportunities and challenges for using BL in Logistics Education in Egyptian Higher Education. Therefore, it explores the SDT framework approach among intrinsic motivation, extrinsic motivation and amotivation in relation to the Basic Psychological Human Innate Needs: autonomy, relatedness and competence. A case study methodology was adopted incorporating quantitative data collection by means of a self-administered questionnaire from learners who were studying at the three Colleges of International Transport and Logistics at the Arab Academy for Science, Technology and Maritime Transport in Egypt. Six hundred and sixteen undergraduate respondents were drawn from three branches in Greater Cairo, Alexandria, and Port Said. The study data analysis used SPSS²² and AMOS¹⁸. It suggests that the three Colleges of International Transport and Logistics at Arab Academy for Science, Technology and Maritime Transport should pay more attention to intrinsic motivation, extrinsic motivation and amotivation in relation to autonomy, relatedness and competence in the virtual learning environment, especially in BL.

Keywords: Blended e-Learning, Structural Equation Modeling, Self Determination Theory, and Learners Motivation.
Introduction

SDT proposes that motivation influences individual behaviour (Ryan & Deci, 2000). In an educational environment, learners can engage in virtual learning methods for the determination of increasing their degree of motivation. The rapid development of technology tools in education has been controversial, especially in terms of motivating learners. In a Traditional Face-to-Face Learning (from now on TF2FL) setting, learners can become more interested in using a virtual learning environment, as it provides them with powerful learning media tools. Dutton and Loader (2002) mentioned that the institutional providers of TF2FL classroom education should adapt to the virtual learning methods in order to survive in today's modern education industry. Blended Learning (from here on BL) is considered to be one of the modern virtual learning methods and is emerging as the new paradigm of alternative education. BL is a mixture of virtual learning and TF2FL methods, as it takes the advantages of both learning worlds. Throughout the virtual learning literature, BL is proven to be one of the best learning methods, as it improves learners’ motivation internally and externally. Moreover, several studies from various domains have tried to explore the BL in motivating learners in higher education (Chen & Jang, 2010; Mahnken et al., 2011). There is a need to pay full attention to identifying the exact opportunities and challenges of BL. Up to now, there appears to be little interest in the BL method for Logistics Education (LE), therefore this study paid a great attention to exploring the opportunities and challenges of BL in LE in Egypt.

An Overview of Self-Determination Theory

Motivation theorists have primarily treated the concept of motivation as having multi-dimensional perspectives (Boekaerts, 1997; Deci & Ryan 2008) as well as multi-level constructs (Boekaerts, 1997). The term motivation is classified as “the process whereby goal activity is instigated and sustained” (Pintrich & Schunk, 2002:5). SDT is one of the innovative motivation theories of the 1970s conceived by Deci and Ryan, when it was first formulated, and has gained prominence ever since (Kirk, 2010). This definition is now widely accepted, as it is multidimensional. Deci and Ryan (2008:182) identified SDT:

As a macro theory of human motivation, self-determination theory (SDT) addresses such basic issues as personality development, self-regulation, universal psychological needs, life goals and aspirations, energy and vitality, non-conscious processes, the relations of culture to motivation, and the impact of social environments on motivation, affect, behavior, and well-being.

By the mid 1980’s, several developments materialized due to publications dedicated to SDT in different domains (Hasenfeld, 1987; Solomon, 1976), including education, psychology, medicine, counselling, health-care and sports. SDT “is a theory of human motivation that addresses individuals’ initiation of behaviour” (Grolnick, 2015: 65). According to the studies of motivation, SDT has been thought of as a key factor in the disciplines of individual Basic Psychological Human Innate Needs: autonomy, competence and relatedness. The need for autonomy refers to
an individual having the freedom of decision making while performing a task (Deci & Ryan, 1985), while the need for competence is felt in producing and bringing about desired outcomes (Darner, 2014; Ntoumanis & Standge, 2009), competence being the ability to successfully master a task. The need for relatedness refers to the experience individuals feel in connecting to others (Kapp, 2013). Relatedness of connectivity and belongingness increases the mutual interest in the classroom. SDT has three different types of motivation: intrinsic motivation, extrinsic motivation and amotivation. Intrinsic motivation refers to individuals’ activated feelings derived from spontaneous satisfaction from tasks undertaken and/or their accomplishment (Gagne & Deci, 2005). As shown in Figure 1, the continuum of self-determination reveals the regulatory styles, ranging from highest to lowest self-determined (from left to right) by Deci and Ryan (1985).

Intrinsic motivation occurs when individuals are accomplishing or undertaking an action or task for its own sense of pleasure, enjoyment, interest and inherent satisfaction (Vallerand & Ratelle, 2002). For example, intrinsic motivation provides learners with the advantages of greater creativity, flexibility, spontaneity, enjoyment, quality of work, increased attention, persistence, and study skills (Amabile, 1985; Deci & Ryan, 1985; Hidi & Harackiewicz, 2000). Extrinsic motivation is a concept identifying an individual experiencing a sense of accomplishing an activity because of a goal distinct from the activity itself (Lonsdale et al., 2011). Bidee et al. (2013)
mentioned that extrinsic motivation has been divided into the following sub-types: integration, identified, introjected and external regulations. Spittle, Jackson, & Casey (2009) classified integrated regulation as a valuable task being integrated in an individual’s behavior and having a sense of an end, not as pleasure. Integrated regulation is an individual performing activities for the sake of the accomplishment, which is very close to intrinsic motivation. However, Deci, Pelletier & Ryan (1991) mentioned that integrated regulation and intrinsic motivation are different as the tasks are vital for a valued outcome, not in the interest of the tasks themselves, as with intrinsic motivation. Identified regulation refers to an individual” ability to determine the value of the activity involved and represents a high degree of autonomy and self-endorsement (Ryan et al., 2009). Introjected regulation is classified as an individual feeling a sense of pressure and perceived obligation (Lee & Reeve, 2012).

In an educational environment, Turban et al. (2007) mentioned individual learners are controlled by external rewards, mainly by choice, for instance by introjected regulation, not external regulation. Areepattamannil and Freeman (2008) defined external regulation as an individual’s behavior being determined by external rewards, including rewards and constraints regulating their behavior. According to the SDT framework by Deci and Ryan (1985), intrinsic motivation is the highest level of self-determination, while extrinsic motivation is the lowest self-determination.

Intrinsic motivation is the most autonomous form of motivation (Friederichs et al., 2015). In the extrinsic motivation, integrated regulation is the highest degree of self-determination in the extrinsic regulations, while external regulation is the lowest degree of self-determination of extrinsic regulations. In addition, amotivation is a lack of self-determination. Amotivation refers to individuals lacking intrinsic and extrinsic motivations (Deci & Ryan, 1985). Amotivation classifies individuals who have a lack of experience and intention to act upon their tasks. This means that if individuals have a lack of motivation, they have non-self-determination.

**Self Determination Theory and Motivation in Blended e-Learning**

The BL method is becoming increasingly popular in educational environments (Kim et al., 2013), but Pahinis et al. (2007) argued that to date there are few research studies in the BL method. In the late 1980s, BL started to gain in popularity due to e-Learning; this was a result of the industry’s belief that mass produced resource content materials would replace all other traditional forms of training programmes (Ireland et al., 2009). Researchers have used other terminologies for the BL method, such as Hybrid Learning, Integrated e-Learning and “Mixed Mode Learning” (Brunner, 2007). However, the term BL method is the most commonly used by researchers in which the TF2FL classroom environment has blended in various combinations of virtual supported media tools (Fleck, 2012), such as asynchronous and synchronous technology tools.

There are two different types of e-Learning: asynchronous distance learning and synchronous distance learning. Asynchronous distance learning refers to the flexibility in interaction between participants, while synchronous distance learning signifies a real time interaction. Asynchronous distance learning appeared before synchronous distance learning. The BL educational concept provides the opportunity to integrate the advances offered by the virtual learning environment with the best
practices and benefits of TF2FL classroom environment (Tselios, Daskalakis, & Papadopoulou, 2011).
Throughout the literature, there are several reported advantages and disadvantages of BL, which vary from country to country, as well as from one educational field to another. However, based on the research by Osguthorpe and Graham, (2003) BL is recognized as an alternative educational method to access daily knowledge and information content, social interaction, personal agency, cost effectiveness and ease of revision. In addition, Graham, Allen, & Ure (2003) claimed that BL provides opportunities for its participants, such as improved pedagogy, increased flexibility, increased access to information, and increased cost effectiveness, compared to TF2FL environment. These opportunities could increase learners’ motivations, as it provides them with several different advantages in adapting the BL method. It would lead to an increase in the level of enjoyment and contentedness throughout the learning environment. However, there are still some challenges of e-Learning that are important to mention including: time and space savings; expanding an institution’s geographical reach; giving the possibility of providing multiple learning practices based on self-regulated learning for adults; improving educational quality; providing interactivity in the process of communication; increasing efficiency for institutions and for students, and achieving customer satisfaction and cost effectiveness compared to traditional classroom-based teaching and learning (Adams & Seagren, 2004). Therefore, there is a need to state the opportunities and challenges of BL; however, these vary according to the participants’ levels of motivation.

**Logistics Education**

There is a need for more research in the content of Logistics Education to meet the demands of industry and government. Logistics Education draws from several disciplines and an increasing number of teaching methods demonstrate the complexity associated with it (Johnson & Pyke, 2000). Onar et al. (2013) stated that Logistics programmes are offered at a combination of many engineering and business administration institutes.

In this study, the essential need for teaching the use of technology in Logistic Education is considered. Development of Information and Communication Technology based systems required to support Logistics Education is now occurring (Prajogo & Sohal, 2013). This has resulted in an obvious gap in the literature given the essentiality of Logistics Education and the growth of advanced technology in shaping a competent logistician with high technological skills. There has been a proliferation of growth in Logistics Education software, warehouse management, and transportation management systems, and supply chain planning and execution (Prajogo & Sohal, 2013). However, Clark (1994) stated that the technology factor alone could not change the learning outcomes; there are other factors. In addition, Sokolova (2011) mentioned that the growth of technology and innovation leads to greater mobility and flexibility in an educational environment. Considering Logistics Education, synchronous technology is the most efficient method for managing tacit knowledge of communication and education, which increases the speed of informational flows in the organization.
Research Method

Data Collection

This current research study used a self-administered face-to-face questionnaire survey. A total of 616 respondents were elicited from three branches of the Colleges of International Transport and Logistics, Arab Academy For Science, Technology and Maritime Transport located in Egypt. These branches are in Greater Cairo, Alexandria and Port Said. The data was collected in the Fall Semester of 2012-2013. The questionnaire survey was prepared in English for learners studying on the undergraduate programme which is delivered in English. Logistics students were told that all of their answers would be confidential and data would be aggregated. SPSS\textsuperscript{22} and AMOS\textsuperscript{18} were used to analyse the data. A Confirmatory Factor Analysis technique determined the dimensions of the study and these were verified by SDT. In addition, structural equation modeling was applied to verify the effect of the SDT on Logistics learners’ motivation. Finally, the structural equation modeling analysis was utilized to test the moderating effect of the hypotheses. Nine hypotheses were tested in this study.

Participants

A pilot study based on 70 learners indicated that the content of the questions and instructions were clear. The questionnaire was then distributed to the learner groups in the three locations which yielded 616 fully answered questionnaires. The demographic questions asked respondents to report their location, gender, age, and education. 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, as shown in Figure 2. 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. The majority 57% (N=351) of the respondents were regular high School Diploma Holders, while 27% (N=169) were American Diplomat Holder and 15% (N=92) IGCSE.

![Figure 2 Respondents' Demographic Characteristics](image-url)
Instruments

The respondents were asked about their opinions of the BL method. “Intrinsic Motivation”, “Extrinsic Motivation”, “Amotivation”, “Autonomy”, “Competence” and “Relatedness” were measured using 106 items. The measure of academic “Intrinsic Motivation” was composed of 66 items and divided into eleven sub-variables (53 items), including “Time Management” (3 items), “Cost Effectiveness” (3 items), “Flexibility in Access” (6 items), “Social Interaction” (16 items), “Feedback and Assessment” (6 items), “Learning Style” (4 items), “Attendance Issues” (4 items), “Ease of Use” (2 items), “General Awareness” (3 items), “Geographical Audience” (3 items), and “Learning Experience” (3 items). Furthermore, “Extrinsic Motivation” (19 items) was divided into “Integrated Regulation” (2 items), “Identified Regulation” (4 items), “Introjected Regulation” (2 items) and “External Regulation” (11 items), “amotivation” was split into six sub-variables (24 items), which are “Technological Infrastructure” (2 items), “Lack of Social Awareness” (5 items), “Lack of Technical and Facilities Support” (2 items), “Isolation and Lack of Social Interaction” (7 items), and “Lack of Technological Skills” (4 items). In addition, the basic psychological human innate needs were divided into three variables, which are “Autonomy” (4 items), “Competence” (3 items) and “Relatedness” (3 items).

Reliability and Validity Tests

This section presents an empirical study for the current research through displaying statistical analyses and the findings of the sample of learners in the College of International Transport and Logistics at Arab Academy for Science, Technology and Maritime Transport. The data findings for all the variables were reliable and valid. All items having an alpha coefficient greater than $\alpha 0.7$ (Chronbach’s Alpha) are considered as recommended by Hair et al. (1998). As can be shown in Table 1, the internal reliability of the “Intrinsic Motivation” scale was $\alpha 0.968$, the “Extrinsic Motivation” scale was $\alpha 0.949$, and the “Amotivation” scale was $\alpha 0.919$. All items under study Cronbach’s Alpha have a greater than $\alpha 0.7$. This indicates adequate validity for the variables under study, whose “Intrinsic Motivation” scale was 0.984, “Extrinsic Motivation” scale was 0.976 and “Amotivation” scale was 0.959. Cronbach’s Alphas for all the sub-variables ranged from $\alpha 0.967$ (Social Interaction/ Intrinsic Motivation) to $\alpha 0.885$ (Lack of Technical and Facilities Support/ Amotivation). The reliability of “Autonomy” was $\alpha 0.918$, while “Competence” was $\alpha 0.900$. The reliability for “Relatedness” was $\alpha 0.907$, while total validity was 0.989.
Variables | No. of Items | Reliability [Chronbach’s Alpha (α)] | Validity
--- | --- | --- | ---
Intrinsic Motivation | 53 | α 0.968 | 0.984
Extrinsic Motivation | 19 | α 0.949 | 0.976
Amotivation | 24 | α 0.919 | 0.959
Autonomy | 4 | α 0.918 | 0.958
Competence | 3 | α 0.900 | 0.949
Relatedness | 3 | α 0.907 | 0.952
Total | 106 | α 0.978 | 0.989

Table 1 Reliability and Validity Results by Variables. Note: Validity is the √Reliability

**Hypotheses Testing**

The hypothesized relationships between variables were tested using AMOS. Thus, this study proposes the following hypotheses:

- **H₁:** There is an Effect of Intrinsic Motivation on Perceived Autonomy
- **H₂:** There is an Effect of Intrinsic Motivation on Perceived Competence
- **H₃:** There is an Effect of Intrinsic Motivation on Perceived Relatedness
- **H₄:** There is an Effect of Extrinsic Motivation on Perceived Autonomy
- **H₅:** There is an Effect of Extrinsic Motivation on Perceived Competence
- **H₆:** There is an Effect of Extrinsic Motivation on Perceived Relatedness
- **H₇:** There is an Effect of Amotivation on Perceived Autonomy
- **H₈:** There is an Effect of Amotivation on Perceived Competence
- **H₉:** There is an Effect of Amotivation on Perceived Relatedness

**Results and Discussion**

A five point Likert Scale was used in the questionnaire and the summary of responses according to the aggregated variables under study are detailed in Table 2. There are no responses for either “Extremely Disagree” or “Disagree”. Most of the respondents noted “Agree” or “Extremely Agree” with the variables under study.

<table>
<thead>
<tr>
<th>Items of the Variables</th>
<th>Measure</th>
<th>Extremely Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Extremely Agree</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrinsic Motivation</td>
<td>F</td>
<td>1</td>
<td>41</td>
<td>57</td>
<td>419</td>
<td>98</td>
<td>3.929</td>
<td>4.000</td>
<td>0.7268</td>
<td>Agree</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>0.2</td>
<td>6.7</td>
<td>9.3</td>
<td>68.0</td>
<td>15.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extrinsic Motivation</td>
<td>F</td>
<td>2</td>
<td>47</td>
<td>49</td>
<td>322</td>
<td>196</td>
<td>4.076</td>
<td>4.000</td>
<td>0.8529</td>
<td>Agree</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>0.3</td>
<td>7.6</td>
<td>8.0</td>
<td>52.3</td>
<td>31.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amotivation</td>
<td>F</td>
<td>1</td>
<td>55</td>
<td>156</td>
<td>356</td>
<td>48</td>
<td>3.641</td>
<td>4.000</td>
<td>0.7584</td>
<td>Agree</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>0.2</td>
<td>8.9</td>
<td>25.3</td>
<td>57.8</td>
<td>7.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Autonomy</td>
<td>F</td>
<td>5</td>
<td>55</td>
<td>20</td>
<td>253</td>
<td>283</td>
<td>4.224</td>
<td>4.000</td>
<td>0.9345</td>
<td>Extremely Agree</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>0.8</td>
<td>8.9</td>
<td>3.2</td>
<td>41.1</td>
<td>45.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competence</td>
<td>F</td>
<td>17</td>
<td>45</td>
<td>27</td>
<td>275</td>
<td>252</td>
<td>4.136</td>
<td>4.0000</td>
<td>0.9882</td>
<td>Agree</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>2.8</td>
<td>7.3</td>
<td>4.4</td>
<td>44.6</td>
<td>40.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relatedness</td>
<td>F</td>
<td>28</td>
<td>41</td>
<td>38</td>
<td>259</td>
<td>250</td>
<td>4.075</td>
<td>4.0000</td>
<td>1.0673</td>
<td>Agree</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>4.5</td>
<td>6.7</td>
<td>6.2</td>
<td>42.0</td>
<td>40.6</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Table 2 Frequency, Mean, and Mode for Variable and Sub-Variables Under Study
The data findings also were analysed with AMOS\textsuperscript{18}. In our analysis, we first used Confirmatory Factor Analysis in the AMOS\textsuperscript{18} statistical package to test the adequacy of the measurement mode. Each variable was used as an input of AMOS to analyse structural relationships between variables. In recent years, the use of structural equation modeling has increased among educational researchers (Teo & Khine, 2009). Edwards and Bagozzi (2000) pointed out that structural equation modeling is particularly useful when the theoretical model involves relationships among the latent constructs and relationships between the latent constructs and the indicators of these constructs. Based on the acceptance of the structural equation modeling complete model, the present study can depend on it to test the relationships between variables under study using structural equation modeling estimates, which display the model fit indicators of the structural equation modeling. In addition, Hox and Bechger (1998) mentioned that structural equation modeling is a powerful technique that can combine complex path models with latent variables (factors) (p.354). Table 3 shows the structural equation modelling parameters, thereby providing acceptance of the goodness of fit of the different measurements of the model.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Model Results</th>
<th>Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-square/df (cmin/df)</td>
<td>2.164</td>
<td>&lt; 3 good; &lt; 5 sometimes permissible</td>
</tr>
<tr>
<td>P-value for the model</td>
<td>0.000</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>GFI</td>
<td>0.925</td>
<td>&gt; 0.95</td>
</tr>
<tr>
<td>AGFI</td>
<td>0.910</td>
<td>&gt; 0.80</td>
</tr>
<tr>
<td>NFI</td>
<td>0.934</td>
<td>&gt; 0.90</td>
</tr>
<tr>
<td>TLI</td>
<td>0.958</td>
<td>&gt; 0.95</td>
</tr>
<tr>
<td>IFI</td>
<td>0.963</td>
<td>&gt; 0.95 great; &gt; 0.90 traditional; &gt; 0.80 sometimes permissible</td>
</tr>
<tr>
<td>CFI</td>
<td>0.963</td>
<td>&gt; 0.95 great; &gt; 0.90 traditional; &gt; 0.80 sometimes permissible</td>
</tr>
<tr>
<td>RMR</td>
<td>0.037</td>
<td>&lt; 0.09</td>
</tr>
<tr>
<td>RMSEA</td>
<td>0.044</td>
<td>&lt; 0.05 good; 0.05-0.10 moderate; &gt; 0.10 bad</td>
</tr>
<tr>
<td>PCLOSE</td>
<td>0.989</td>
<td>&gt; 0.05</td>
</tr>
</tbody>
</table>

Table 3 Some Fit Measures of the Overall Structural Equation Model

Confirmatory Factor Analysis was used to test the factors that could be included in the dimensions “Intrinsic Motivation”, “Extrinsic Motivation”, “Amotivation”, “Autonomy”, “Competence” and “Relatedness”. Confirmatory Factor Analysis is a type of structural equation modeling that deals specifically with measuring models, that is, the relationship between observed measures or indicators and latent variables. According to Byrne (2010), Hu and Bentler (1999), and Kline (1998), a Goodness-of-Fit Index (GFI) and a Comparative Fit Index (CFI) between 0.9 and 1.0 indicate a good fit. This table displays the model fit indicators of Confirmatory Factor Analysis which have the minimum discrepancy (CMIN/DF)=2.164, P-Value < 0.000, Goodness of Fit Index (GFI)= 0.925, Comparative Fit Index (CFI)=0.963, Incremental Fit Index (IFI)=0.963, Tucker-Lewis Index (TLI)= 0.958, Root Mean Square Residual (RMR) =0.037, Normed-Fit-Index (NFI) =0.934, Adjusted Good-Fit-Index (AGFI)= 0.910, Root Mean Square Error of Approximation (RMSEA)= 0.044, and Root Mean Square Error of Approximation (RMSEA)= 0.044. It was found that the values of the below mentioned indicators are acceptable, which means that all the divisions’
estimated dimensions are fitting. Figure 3 represents the standardized path coefficients of the research model.

As seen in Table 4, the research identifies the relationships between variables. Consistent with H₁–H₃, there are direct effects of “Intrinsic Motivation” on perceived “Autonomy”, “Competence” and “Relatedness” (β =0.862, ρ <0.001; β =0.786, ρ <0.001; β =0.456, ρ < 0.001, respectively). The findings seem to support the assertion of Ryan and Deci’s (2000) SDT posits that intrinsic motivation is sustained by the satisfaction of the three Basic Psychological Human Innate Needs for perceived “Autonomy”, “Competence” and “Relatedness”. Furthermore, there is an effect of “Intrinsic Motivation” on “Time Management”, “Flexibility in Access”, “Social Interaction”, “Feedback and Assessment”, “Learning Style”, “Ease of Use”, “General Awareness”, “Geographical Audience” and “Learning Experience” (γ =0.651, ρ <0.001; γ =0.640, ρ <0.001; γ =0.644, ρ <0.001; γ =0.632, ρ <0.001; γ =0.549, ρ < 0.001; γ =0.458, p< 0.001; γ =0.511, ρ < 0.001; γ =0.501, ρ<; γ=0.496, ρ <, 0.001, respectively).
Hypothesis | Path | Est. | S.E. | C.R. | \( \rho \) | Results
--- | --- | --- | --- | --- | --- | ---
H₁: There is an Effect of Intrinsic Motivation on Perceived Autonomy | Autonomy \( \leftrightarrow \) Intrinsic Motivation | 1.015 | .106 | 9.554 | *** | Accepted
H₂: There is an Effect of Intrinsic Motivation on Perceived Competence | Competence \( \leftrightarrow \) Intrinsic Motivation | .888 | .096 | 9.242 | *** | Accepted
H₃: There is an Effect of Intrinsic Motivation on Perceived Relatedness | Relatedness \( \leftrightarrow \) Intrinsic Motivation | 640 | .125 | 5.129 | *** | Accepted
H₄: There is an Effect of Extrinsic Motivation on Perceived Autonomy | Autonomy \( \leftrightarrow \) Extrinsic Motivation | .039 | .087 | .452 | .652 | Rejected
H₅: There is an Effect of Extrinsic Motivation on Perceived Competence | Competence \( \leftrightarrow \) Extrinsic Motivation | .124 | .081 | 1.534 | .125 | Rejected
H₆: There is an Effect of Extrinsic Motivation on Perceived Relatedness | Relatedness \( \leftrightarrow \) Extrinsic Motivation | .376 | .117 | 3.220 | .001 | Accepted
H₇: There is an Effect of Amotivation on Perceived Autonomy | Autonomy \( \leftrightarrow \) Amotivation | .078 | .061 | 1.284 | .199 | Rejected
H₈: There is an Effect of Amotivation on Perceived Competence | Competence \( \leftrightarrow \) Amotivation | .060 | .058 | 1.039 | .299 | Rejected
H₉: There is an Effect of Amotivation on Perceived Relatedness | Relatedness \( \leftrightarrow \) Amotivation | .206 | .087 | 2.384 | .017 | Accepted

Table 4 Unstandardized Estimates of Confirmatory Factor Analysis for the Variables Under Study

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

Inconsistent with \( H₄\)–\( H₅ \), there are no direct effects of “Extrinsic Motivation” on perceived “Autonomy” and “Competence”, which were not significant as (\( \beta =0.036, \rho <0.652; \beta =0.117, \rho <0.125 \), respectively). Therefore, these two null hypotheses were rejected in this study. This result contradicts the study of Reeve et al. (2002), where “Autonomy” was positively associated with task interest, conceptual understanding, grades, and psychological well-being. In addition, De Charms (1968) claimed that “Extrinsic Motivation” has typically been characterized as a pale and impoverished form of motivation in contrast with Intrinsic Motivation. However, concerning \( H₆ \), the path from “Extrinsic Motivation” to perceived “Relatedness” was significant (\( \beta =0.286, \rho <0.001 \)). Kaufman & Dodge (2009) showed that “Relatedness” and value might foster internalization or integration of extrinsic motivators. Moreover, the standardized path of “Extrinsic Motivation” to “Integrated Regulation”, “Identified Regulation”, “Introjected Regulation” and “External Regulation” were significant as (\( \gamma =0.738, \rho <0.001; \gamma =0.804, \rho <0.001; \gamma =0.748, \rho <0.001; \gamma =0.748, \rho <0.001 \), respectively). According to \( H₇\)–\( H₈ \), there are no direct effects of AM on Perceived “Autonomy” and “Competence” (\( \beta =0.062, \rho <0.199; \beta =0.050, \rho <0.299 \), respectively).
However, there is a direct effect of “AM” on “Relatedness” (β = 0.139, ρ < 0.017), consequently, H9 has been accepted. Additionally, the standardized path of “Amotivation” to “Technological Infrastructure”, “Lack of Social Awareness”, “Lack of Technical and Facilities Support” and “Isolation and Lack of Social Interaction” showed significance (γ = 0.500, ρ < 0.001; γ = 0.620, ρ < 0.001; γ = 0.555, ρ < 0.001; γ = 0.501, ρ < 0.001, respectively). According to the hypotheses testing results of the structural equation modeling data analysis, all variables were generally acceptable, and, the study model is considered a satisfactory. However, H4, H5, H7 and H8 are rejected in this study. This reflects that it is important to pay attention to the learners’ types of motivation in relation to their needs, and that these factors could affect their performance.

Conclusion

Motivation has been recognized as a critical issue affecting learning. In the history of distance education, BL is considered as the third generation of distance education (Sue & Brush, 2008). In virtual learning literature, BL has been shown to be one of the best learning methods, as it improves learners’ motivation internally and externally. An increasing body of data from higher education studies tested this use of virtual learning and BL (Bloomfield, While & Roberts, 2008; Lindeman et al., 2015). Several studies have shown different opportunities and challenges of BL (El-Seoud et al., 2014; Kamel & Hussein, 2002; Mohammad, 2008).

In the current study, SDT shows that a learner’s motivation is determined by the satisfaction of three universal basic psychological needs: Autonomy, Competence and Relatedness, as well as Intrinsic Motivation, Extrinsic Motivation and Amotivation. In a matter of a few short years, Egyptian higher educational institutions could be transformed in a manner consistent with the opportunities and challenges of a virtual learning environment, improving the quality of the classroom experience.

In closing, as this study explores the opportunities and challenges of BL, it is essential that the researcher evaluates BL effectiveness. This study examined the influence of learner motivation on the opportunities and challenges of the BL method. It showed that Extrinsic Motivation and Amotivation have no effect on “Competence” or “Autonomy”, while Intrinsic Motivation has an effect on three Basic Psychological Human Innate Needs. SDT identifies that there are three universal Basic Psychological Human Innate Needs which lead to Intrinsic Motivation. There is a need for a comparison between developed and developing countries. In addition, future research could highlight more opportunities and barriers of BL. Currently in Egypt, there is a lack of instructors using BL, and there is little research on these instructors’ perspectives, compared with the numerous studies concerning learners.
References


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