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Motivational Profiles of Adult Learners in Online and Blended Learning.

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Abstract: Having the necessary skills to succeed in an educational program does not ensure that learners will achieve positive outcomes. Learners also need the motivation to learn in order to use their skills and engage in the learning process. This is especially true in online and blended learning (OBL) environments, which offer learners flexibility and autonomy to shape their own learning process. Since adult education in general and particularly OBL in adult education attracts a heterogeneous group of people, there is diversity amongst adult learners with regard to their motivation to learn and their reasons for choosing OBL. The purpose of this study is to examine whether motivational profiles exist amongst learners in the specific context of OBL in adult education. To achieve this objective, we conducted a survey with 180 learners in adult education. We administered the academic motivation scale questionnaire (AMS; Vallerand et al, 1992), targeting learners enrolled in an OBL program in adult education. Finally, we have performed cluster analysis of the participant scores taken from the survey.

Our results indicate the presence of three motivational profiles amongst adult learners. These motivational profiles may be viewed as contributing to our understanding of how individuals participating in OBL in adult education are or are not motivated to learn. This information can be used by institutions and teachers to develop their educational curriculum to match the profiles of their learners and to take into consideration of their learners' motivation. In turn, researchers can use the results as a starting point for further research into the relationship between motivational profiles and learning outcomes. In this way, deeper understanding can be made acquired into how motivation enhances intent-to-persist and success in OBL.

Keywords: Adult education, online and blended learning, motivation, learner profiles

1. Introduction

Motivation in education is seen as a key factor by impacting upon students' learning (e.g. Abdullah et al, 2008). The andragogy, studied by Knowles, Holton III and Swanson (2005) states that older adults are more self-directed, meaning that their motivation influences their regulation and adaptation of their behavior, and that they mostly do not learn for external purposes.

Learners can have multiple reasons or motivations that drive their behavior, especially in autonomous oriented environments like online and blended learning (OBL). The motivation of adult learners is interesting to explore because they are different from their younger counterparts, yet also very diverse in relation to each other.

So the purpose of this study is to examine whether motivational profiles exist among learners in the specific context of OBL in adult education. Through a person-centered approach, we will attempt to determine how learners in OBL in adult education are motivated to learn. Given the strong relationship of motivation with learning outcomes (Boiché & Stephan 2014), results from this study could provide valuable information for both researchers and teachers in adult education.

2. Theoretical background

2.1 Online and blended learning in adult education

Formal adult education in Flanders (the Dutch-speaking region of Belgium) offers training at different educational levels. Adults mostly participate voluntarily, some are advised to enroll in a course by, for instance, their employer. Most training is offered in a traditional way of teaching; the learner has to attend the institution for every lesson. However, OBL recently emerged and continues to grow (Lehmann, Hähnlein & Ifenthaler 2014).

OBL is a form of distance education. Online learning means that the adult learner acquires the content of his or her education for his or herself, possibly with a certain degree of online support, but without official, planned face-to-face learning encounters with a teacher. Blended learning, on the other hand, is characterised by a mix of online or distance learning sessions and traditional face-to-face or contact sessions (e.g. Samruayruen et al, 2013).

Two important characteristics of OBL are its flexibility and autonomy. These characteristics may be causing the heterogeneity amongst participating groups of adult learners, since they create more access to education for people with multiple responsibilities, such as a job or a family (Kormos & Csizér 2014). The flexibility and autonomy may also be a consequence since adults by definition already have previous life, work and educational experiences. The adult learners therefore require an educational approach that is matched to their individual learning styles. OBL can be developed by teachers and institutions in a way that creates space for learners to be engaged at their own pace and with their own style.

Besides the heterogeneity of adult learners, flexibility and autonomy also create opportunities for students to shape and control their own learning. In this way, students become co-producers of their own learning process (Ehlers 2003). They therefore obtain some responsibility for their learning process leading them to take their role as students seriously. This responsibility means that they not only need the skills to be able to shape their learning process but also require the motivation to engage in it (Dörnyei & Ushioda 2011). This motivation can be partly controlled by the teacher by adapting the curriculum and the OBL environment in line with the individual motivations of their group of learners. In this matter, results from this study can be supportive for teachers.

2.2 Motivation of adult learners

Adult learners' engagement in their learning process starts with a commitment to participate in adult education. Motivation is the reason why people select a particular activity, determine how long to persist with it and what degree of effort to invest (Dörnyei & Ushioda 2011). Motivation is therefore a significant concept with regard to for example educational and affective outcomes. For example, Lüftenegger et al (2012) state that students who are motivated to learn are more likely to persist with their education. Next to this, highly motivated students achieve higher levels of performance (Sankaran & Bui 2001) and are more satisfied with their education (Artino 2007 as summarized by Kuo 2013).

Previous studies that have explored the motivational profiles of learners refer to self-determination theory or SDT (Deci & Ryan 2000). Within SDT, five types of motivation are distinguished, clustered into three main categories. First, learners who are *intrinsically motivated*, perform a certain activity for its inherent pleasure and satisfaction. Second, extrinsic motivation can be divided into three different kinds of motivation regulation. *Externally regulated* people act to obtain a positive outcome or avoid a negative one. *Introjected regulation* means that people want to behave in a way to maintain a positive view of themselves- and/or avoid feelings of shame and guilt. When motivated through *identified regulation*, people want to attain a personally valuable goal. Finally, people who are *amotivated* feel no connection between their actions and the expected results (Deci & Ryan 2000). These motivations can also be clustered in terms of autonomous motivation, which includes intrinsic motivation and identified regulation, versus controlled motivation, which includes extrinsic and introjected regulation.

Studies that have drawn upon these kinds of motivation to identify motivational profiles have already been conducted in high school or college programs. We anticipate to find some similarities between motivational profiles of previous studies and current study. Ratelle et al (2007) have used the three subcomponents of 'autonomous', 'controlled' and 'amotivated' motivation to refer to three motivational profiles. They found students with high levels of controlled motivation and amotivation but low autonomous motivation; students

with high levels of both controlled and autonomous motivation but low amotivation; and students with moderate levels of controlled and autonomous motivation but low levels of amotivation.

Vansteenkiste et al (2009) identified four motivational profiles: namely, a good quality motivation group who had high autonomous and low controlled motivation; a poor quality motivation group who had low autonomous and high controlled motivation; a low quality motivation group who had both low autonomous and controlled motivation; and finally, a high quantity motivation group who had both high autonomous and controlled motivation.

Finally, Boiché and Stephan (2014) refer to five distinct profiles: namely, additive (= high quantity); self-determined (= good quality); moderate (= moderate scores on all motivations); low (= low quantity) and non-self-determined (= poor quality).

The aforementioned studies do not concentrate on the specific context of OBL. However, information and communication technology (ICT) promotes the motivation to learn which makes us realize that this context is important (Lowden 2013). Furthermore, Sankaran and Bui (2001) state that learners in distance education undergo many sacrifices to obtain an education, for example by giving up some of their family time. In this way, motivation becomes a driving factor and a key element of the autonomy that learners receive, which in turn influences their performance (Hegarty 2010). In view of the aforementioned heterogeneousness of adult learners in OBL environments, we expect adult learners have different motivational profiles.

2.3 Research objectives and research questions

The present paper aims to explore motivational profiles of learners in OBL environments in adult education in Flanders, Belgium. In a first step, we will examine whether there are different profiles to distinguish among the adult learners. In a second step, we investigate the differences in background variables (socio-demographic and socio-economic characteristics) among learners from different motivational profiles. We focus on the following two research questions:

- (1) What kind of motivational profiles can we identify amongst learners in OBL environments in adult education in Flanders?
- (2) How do the motivational profiles differ according to the background variables of the adult learners?

3. Research method

3.1 Participants

Seven centres for adult education in Flanders participated in the study. 180 learners in online or blended courses filled in the survey. 65% of the participants were females. The participants ranged from 19 to 57 years old, with 71.7% of the participants being between 25 and 50 years old, 22.2% younger than 25 years and 5.6% who were older than 50 years. Most of the participants were enrolled in a teacher education (TE; 62.8%). 28.9% participate in secondary adult education (SAE) and only a small number of participants (8.3%) were enrolled in higher vocational adult education (HVAE).

3.2 Procedures and instruments

A questionnaire was developed in order to gather information from learners about (1) their background with regard to their current education, (2) their socio-demographic and socio-economic situation and (3) their psychological characteristics, such as their motivation to learn.

3.2.1 Socio-demographic and socio-economic background

In terms of socio-demographic and socio-economic background, the following variables were included: age, gender, their highest obtained degree, employment and marital status.

3.2.2 Motivation to learn

The Academic Motivation Scale (AMS) of Vallerand et al (1992) was used in this study to evaluate why the individuals participate in adult education. The instrument builds on 20 items representing five subscales. These subscales refer to the five motivation scales that we have mentioned before. The respondents were asked to indicate on a five-point Likert scale the extent to which they agree that the item was a reason for them to participate in adult education (1 = totally not agree to 5 = totally agree).

The AMS was translated into Dutch and applied in a new context. Therefore data were subjected to a confirmatory factor analysis using Lavaan (Rosseeel 2012) to test the validity and reliability of the scale and the extent to which the theoretical model - in this case, the five-factor model corresponding to the five subscales - is adequately represented by the data.

Exploratory factor analysis (EFA) generates a satisfactory factor loading for four of the five original factors. The factor 'external regulation' was not successfully extracted. Confirmatory factor analysis (CFA) was first tested with the five factors (based on the original five subscales), but the fitness index of this model was not satisfactory. Based on the EFA results, we conducted the CFA with four factors (leaving out the four items of 'external regulation'). The fitness index of this model was acceptable ($\chi^2(105) = 929.23$; $p < .001$; CFI = .95; TLI = .94; RMSEA = .05 and SRMR = .06). Theoretically, as 'external regulation' is related to 'controlled motivation', this concept is also reflected in the introjected regulation; therefore, leaving out the subscale 'external regulation' does not theoretically affect the investigation of motivation profiles in this study.

All subscales appear to display adequate levels of internal consistency with Cronbach alphas ranging from $\alpha = .66$ to $\alpha = .86$.

3.3 Data analyses

The first step was to conduct normality analysis for each variable and check if there were any outliers to avoid distortion in the formation of clusters. Next, in order to achieve the objective of this study, we conducted cluster analysis to group the participants according to their motivational characteristics using a two-step procedure. The first step was to conduct hierarchical cluster analysis to explore the number of clusters that emerged naturally using Ward's method and squared Euclidean distance. In a second step the k-means procedure to actually form the clusters was used. Finally, we examined the inter-cluster differences in terms of motivation type and the clusters' composition in terms of background variables using ANOVA and Chi-square tests.

4. Results

4.1 Descriptive statistics

We first conducted normality analysis and checked the data for outliers. By searching for univariate outliers with values more than 3 S.D. below or above the mean and multivariate outliers with high Mahalanobis distance values, eight outliers were excluded from analysis. This resulted in a final sample of 172 adult learners in OBL.

To describe the motivations of learners in OBL in adult education, the means, standard deviations and the minimum and maximum scores of each subscale (see Table 1) were examined.

The results show that all participants had a very low amotivation (mean= 1.57, SD= 0.68) and that the participants scored high on intrinsic motivation (mean= 3.95, SD= 0.83); and high on identified regulation (mean= 3.98; SD= 0.67).

Table 1: Descriptive statistics of motivations to learn

	<i>M</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	α
Intrinsic motivation	3.95	0.83	1.25	5	.857
Identified regulation	3.98	0.67	1.75	5	.662
Introjected regulation	2.91	1.07	1	5	.799
Amotivation	1.57	0.68	1	3.50	.733

Note: M = mean; SD = standard deviation, Min = minimum score; Max = maximum score

4.2 Cluster analysis

4.2.1 Identifying clusters

A hierarchical cluster analysis was conducted on the four mean scores of motivation. Based on the agglomeration coefficients and previous research, a 5-, 4- or 3-cluster solution was proposed suitable for the data. The k-means analysis was therefore conducted three times to determine how many clusters should be

retained and to assign the participants to their cluster. The 5-cluster solution was not accepted due to the existence of a cluster with a very small group of members. Also the 4-cluster solution was not opted because this solution did not show distinct variations between two clusters (two of the four clusters showed similar results). Based on the variation between the clusters and results of Ratelle et al (2007), a 3-cluster solution was identified.

4.2.2 Motivational profiles of the clusters

To label the clusters, the features of each motivation subscale for every cluster were considered (see Figure 1). The first cluster was labeled 'extrinsic' with a high score on identified regulation and low scores on intrinsic motivation, introjected regulation and amotivation. 21.3% (N= 36) of the participants were included in this cluster. The second cluster was labeled 'autonomous' with high scores on intrinsic motivation and identified regulation and low scores on introjected regulation and amotivation. 32% (N= 54) of the participants were included in this cluster. The last cluster contained 46.7% (N= 79) of the sample and was labeled 'motivated'. It showed high mean scores on intrinsic motivation, introjected and identified regulation and a low score on amotivation. A series of ANOVAs indicated that each motivation subscale significantly varied between clusters (see Table 2).

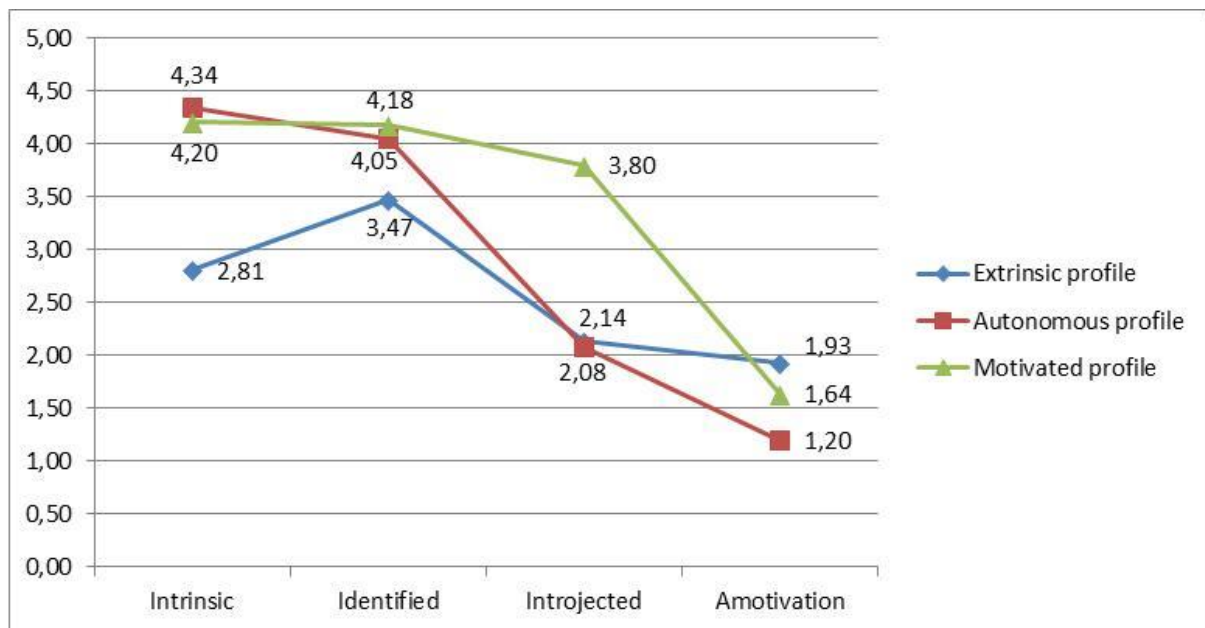


Figure 1: Mean scores of motivation for each profile

Table 2: ANOVA's of motivations in each cluster

	<i>Extrinsic profile</i>	<i>Autonomous profile</i>	<i>Motivated profile</i>	<i>F-value</i>
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	
Intrinsic motivation	2.81 (.12)	4.34 (.07)	4.20 (.06)	89.20*
Identified regulation	3.47 (.12)	4.05 (.09)	4.18 (.06)	16.21*
Introjected regulation	2.14 (.13)	2.08 (.09)	3.80 (.06)	142.44*
amotivation	1.93 (.12)	1.20 (.04)	1.64 (.08)	16.38*

* $p < .01$.

4.3 Relationship between clusters and background variables

Next, we examined the background characteristics of the motivational profiles, including gender, age, marital status, highest degree attained, employment, educational level and experience of OBL.

Crosstabs indicated that age, marital status, employment and experience of OBL did not influence the cluster membership of learners. These variables do not differ with regard to the motivational profiles and will therefore not be discussed in depth.

A Chi-square test of association revealed significant results for gender ($\chi^2(2) = 8.20$; $p < .05$), the highest degree attained and educational level. A closer analysis of the data (see Table 3) indicated that the amount of both females and males is highest in the 'motivated' cluster. Females are the least represented in the 'extrinsic' cluster, while males are the least represented in the 'autonomous' cluster. The 'extrinsic' cluster has an equal distribution amongst gender. The 'highest degree attained' is significant with $\chi^2(4) = 18.75$; $p < .01$. The 'motivated' cluster has the most equal distribution amongst learners in all three categories of degree attained. In the 'autonomous' cluster the number of learners grows when the highest degree attained increases. In the 'extrinsic' cluster, both lowest and highest degree attained are mostly represented (see Table 3).

Finally, the variable 'educational level' is significant with $\chi^2(4) = 14.75$; $p < .01$. For every cluster, most of the participants were enrolled in TE. However, in the 'motivated' cluster, a similar number of participants were enrolled in teacher education, such as in SAE. If we look at the differences between the clusters for every educational program separate, the participants in HVAE and the TE are divided equally among the three clusters. However, for SAE, most of the participants are in the 'motivated' cluster (see Table 3).

Table 3: Percentages of gender, degree and educational level for each motivational profile

Profile	Gender		Highest degree attained			Educational level		
	Female	Male	Lower than secondary degree	Secondary degree	Higher educational degree	HVAE	TE	SAE
Extrinsic	16 (45.7%)	19 (54.3%)	11 (30.6%)	7 (19.4%)	18 (50%)	1 (2.8%)	26 (72.2%)	9 (25%)
Autonomous	39 (72.2%)	15 (27.8%)	2 (3.9%)	11 (21.6%)	38 (74.5%)	7 (13%)	40 (74.1%)	7 (13%)
Motivated	56 (70.9%)	23 (29.1%)	23 (29.5%)	23 (29.5%)	32 (41%)	7 (8.9%)	40 (50.6%)	32 (40.5%)

Next, a multivariate logistic regression analysis was undertaken to identify the influence of gender, highest degree attained and educational level on the cluster membership. The model shows a coefficient of determination (R^2) of .23 (Nagelkerke), meaning that 23% of the cluster membership can be explained by the three independent variables. Only gender and the highest degree attained remained significant in the model with $\chi^2(2) = 6.693$; $p < .05$ for gender and $\chi^2(4) = 12.310$; $p < .05$ for highest degree attained. The results of the multivariate logistic regression analysis are presented in Table 4.

Table 4: Multivariate logistic regression analysis of gender, highest degree attained and educational level on cluster membership

		<i>b (SE)</i>	<i>Sig.</i>	<i>Exp(B)</i>
Extrinsic cluster	Intercept	-1.355 (.911)	.137	
	Female	-1.131 (.453)	.012	.323
	Male	0		
	HVAE	-.127 (1.266)	.920	.881
	TE	1.623 (.803)	.043	5.070
	SAE	0		
	Lower than secondary education	.885 (.853)	.300	2.422
	Secondary education	-.233 (.580)	.687	.792
	Higher education	0		
Autonomous cluster	Intercept	.001 (.779)	.999	
	Female	-.162 (.446)	.717	.850
	Male	0		
	HVAE	.706 (.791)	.372	2.027
	TE	.278 (.669)	.677	1.321
	SAE	0		
	Lower than secondary education	-2.399 (.970)	.013	.091
	Secondary education	-.923 (.499)	.064	.397
	Higher education	0		

Note: reference category: motivated cluster

Females have a significant lower probability than males ($p < .05$; OR = .323) and learners in the TE have a significant higher probability than learners in SAE ($p < .05$; OR = 5.070) of being a member of the 'extrinsic' cluster compared to the 'motivated' cluster.

With regard to the 'autonomous' cluster as compared to the 'motivated' cluster, learners with a degree of education lower than secondary education have a significantly lower probability than learners with a higher educational degree ($p < .05$; OR = .091) of being a member of the 'autonomous' cluster compared to the 'motivated' cluster.

5. Discussion

The purpose of this study was to document motivational profiles of learners in OBL courses in adult education. A three-cluster solution was distinguishing a) an 'extrinsic' profile with high identified regulation and low intrinsic motivation, amotivation and introjected regulation; b) an 'autonomous' profiles with high intrinsic motivation and identified regulation, and low amotivation and introjected regulation; and c) a 'motivated' profile with high intrinsic motivation, high identified and introjected regulation and low amotivation. Despite being attained in a different context, these results moderately replicate the cluster solution of previous research studies.

The 'motivated' profile can be compared with the 'high quantity' cluster from Vansteenkiste et al (2009) and the 'additive' cluster from Boiché and Stephan (2014), whereas the 'autonomous' profile can be compared with the 'good quality' cluster from Vansteenkiste et al (2009) and the 'self-determined' cluster from Boiché and Stephan (2014). The 'extrinsic' profile found in this study consists of a high score on identified regulation, which is both a type of extrinsic and a type of autonomous motivation. Being that previous research characterised their profiles in terms of autonomous and controlled motivation, and that our 'extrinsic' profile

is only a part of autonomous motivation, we could not compare this profile with the results of previous research.

As expected, we did not find any profiles with only high scores in amotivation or controlled motivation (which consists of external and introjected regulation). This is because adult education is, mostly, not mandatory, except for adults whose employer, for instance, expects them to enroll. Next to this, the provided flexibility and autonomy of online and blended courses require learners who are motivated to work and learn autonomously and responsibly. Learners with controlled or amotivation will less likely participate, especially in this specific context. This has also been proven by the descriptive statistics, which show that our sample of adult learners are mostly intrinsically motivated and score high on the identified regulation. In other words, the adult learners mostly study for their own personal purposes and not to avoid shame or make someone else proud.

Teachers and institutions can make use of the different motivational profiles to adapt their courses if they have information about which learners are represented in the different clusters. In this research study, there are no significant differences with regard to background variables like age, marital status, employment and experience of OBL. Learners with different scores on these variables are equally distributed among the different profiles. On the other hand, the membership in a certain cluster depends partly on the learners' gender and the highest degree attained. This information can help teachers and institutions predict which kind of motivation their learners have. The results show that females seem to be found more in the 'motivated' and 'autonomous' profiles than in the 'extrinsic' profile and males are more equally distributed among the different profiles. Higher educated learners tend to be situated more in the 'autonomous' profile. These results can provide us a basis to further study the relationship between motivation profiles and performance of adult learners, e.g. the characteristics of 'autonomous' profile and learning outcomes (Boiché & Stephan 2014).

6. Limitations and perspectives

Firstly, the sample of this study was relatively small. Therefore we could not use a double-split cross-validation procedure to examine the stability of the cluster solutions. Next to this, the small sample includes learners from different levels of adult education, but not every level has a representative number of learners. Therefore, the data was limited to compare or provide information with regard to adult learners with different educational levels. The recommendation we would make here is that an exploration of the motivational profiles is needed using a bigger and more representative sample for the different educational levels. Since this study focuses on OBL, it is also necessary to have a representative number of learners who are enrolled in online courses in comparison with learners who are enrolled in blended courses.

Next to this, the current study was based on a survey measurement of adult learners' motivation. A quantitative approach like this, can benefit from additional qualitative research. In depth interviews, for example, can serve more detailed information about the differences amongst members of different clusters with regard to their motivations to learn, and specifically, the reasons to learn in a specific OBL context.

In conclusion, the present study confirms the existence of different motivational profiles of adult learners in OBL. Results from this study provide insights for researchers to study the motivation of OBL learners in adult education and the relationship between motivation and academic and personal outcomes. Insights in the motivational profiles can also be relevant for teachers and institutions, because they learn to know and predict the motivations of their audience. This helps them to tailor their courses and motivational interventions for adult learners with different motivational profiles.

7. References

- Abdullah, M., Parasuraman, B. and Muniapan, B., et al (2008) Motivating factors associated with adult participation in distance learning program. *International Education Studies*, Vol 1, No. 4, pp 104-109.
- Boiché, J. and Stephan, Y. (2014) Motivational profiles and achievement: A prospective study testing potential mediators. *Motiv Emot*, Vol 38, pp 79 - 92.
- Deci, E. L. and Ryan, R. M. (2000) The 'what' and 'why' of goal pursuits: Human needs and the self-determination of behavior. *Psychological inquiry*, Vol 11, pp 227 - 268.
- Dörnyei, Z. and Ushioda, E. (2011) *Teaching and researching motivation (2nd ed.)*. Harlow, UK: Pearson education limited.
- Ehlers, U.-D. (2003) Quality in E-learning: The learner as a key quality assurance category. *European Journal Vocational Training*, Vol 29, pp 3-15.
- Hegarty, N. (2010) Application of the academic motivation scale to graduate school students. *The Journal of Human Resource and Adult Learning*, Vol 6, No. 2, pp 48-55.
- Knowles, M. S., Holton III, E. F. and Swanson, R. A. (2005) *The adult learner: the definitive classic in adult education and human resource development. (6th ed.)*. Burlington, USA: Elsevier.
- Kormos, J. and Csizér, K. (2014) The interaction of motivation, self-regulatory strategies, and autonomous learning behavior in different learner groups. *Tesol quarterly*, pp 275-299.
- Kuo, Y.-C., Walker, A. E., Belland, B. R. and Schroder, K. (2013) A predictive study of student satisfaction in online education programs. *The international review of research in open and distance learning*, Vol 14, No. 1, pp 16-39.
- Lehmann, T., Hähnlein, I. and Ifenthaler, D. (2014) Cognitive, metacognitive and motivational perspectives on reflection in self-regulated online learning. *Computers in Human Behavior*, Vol 32, pp 313-323.
- Lowden, K., Jurkovic, R. and Mozelius, P. (2013) *How to motivate adults learners through e-learning: Some key insights from research case studies*. Proceedings of the 12th European Conference on e-Learning. UK: Academic Conferences and Publishing International Limited Reading.
- Lüftenegger, M., Schober, B. and van de Schoot, R. et al (2012) Lifelong learning as a goal – Do autonomy and self-regulation in school result in well prepared pupils? *Learning and Instruction*, Vol 22, pp 27-36.
- Ratelle, C. F., Guay, F., Vallerand, R. J. and Larose, S., et al (2007) Autonomous, controlled, and amotivated types of academic motivation: A person-oriented analysis. *Journal of Educational Psychology*, Vol 99, No. 4, pp 734 - 746.
- Rosseel, Y. (2012) Lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, Vol 48, No. 2, pp 1-36.
- Samruayruen, B., Enriquez, J. and Natakatoong, O., et al (2013) Self-regulated learning: A key of a successful learner in online learning environments in Thailand. *Educational computing research*, Vol 48, No. 1, pp 45-69.
- Sankaran, S. R. and Bui, T. (2001) Impact of learning strategies and motivation on performance: a study in web-based instruction. *Journal of Instructional Psychology*, Vol 28, No. 3, pp 191-198.
- Vallerand, R. J., Pelletier, L. G. and Blais, M. R., et al (1992) The academic motivation scale: a measure of intrinsic, extrinsic, and amotivation in education. *Educational and Psychological Measurement*, pp 1003 - 1017.
- Vansteenkiste, M., Sierens, E. and Soenens, B., et al (2009) Motivational profiles from a self-determination perspective: The quality of motivation matters. *Journal of Educational Psychology*, Vol 101, No. 3, pp 671 - 688.