The Impact of Cultural Dimensions on Student's Use of E-Learning System

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Abstract. *This paper studies relationships in the conceptual model based on cultural dimensions of learning and users' beliefs. For such purpose, a questionnaire consisted of 44 items was developed and administered to 225 students of undergraduate study programmes. Although no respectable cultural differences were found, this paper enhances the understanding of males' and females' perception of using Moodle, social relationships and temporal issues. Also, considerable differences were noted between students of different study programmes in their perception of social relationships.*

Keywords. Cultural dimensions of learning framework, e-learning, learning management system, perceived usefulness, perceived ease of use

1 Introduction

This study aims to better understand the needs of students in terms of e-learning environment which does not always bring the necessary improvement and quality of teaching and learning. There are many studies that report the adoption and use of e-learning system, but do not take into account cultural factors that also influence the use of an e-learning environment (Aparicio, Bacao & Oliveira, 2016).

Hofstede (2011) defined culture as "the collective programming of the mind that distinguishes the members of one group or category of people from others". Over the years, culture was studied from different psychological and sociological aspects trying to explain similarities and differences. A global society has no longer boundaries in knowledge sharing and information transfer because they have evolved under the influences of information and communication technology (ICT) development. Recent researches seek to reveal a degree of society assimilation, to what extent human society accepts the same values and which factors have influence on that process.

In the educational context, the lecturers must be aware of the cultural impact on the experience of students because it has a major influence on their motivation and engagement. Also, during the phase of instructional design (ID), the analyses of cultural characteristics of students is mostly skipped (Parrish & Linder-VanBerschot, 2010). Inevitably, there is a great need for instructional designers to take into consideration cultural biases and try to avoid them during the design.

Nevertheless, cultural differences or similarities between students may exist irrespective of their nationality. Hofstede and Hofstede (2005) have confirmed that there are three sources of influence on human's behaviour and thinking, and they are: human nature, culture and personality. In this study, the culture is treated as the main influencing factor.

The trends of modern teaching are directed at students, thus changing their roles from a passive listener to an active participant. Consequently, a role of the lecturer is replaced by the role of a tutor who is responsible for acquiring the competences of his students and for creating a comfortable working atmosphere for everyone in the group. Also, traditional forms of teaching are replaced by virtual environment for learning in which lecturers are responsible for preparing and publishing materials and various multimedia content. Teaching materials do not necessarily correspond to learners' way of acquiring knowledge, and the aim should be to constantly strive for an individual approach to instructional design. For this reason, as Thomas, Mitchell & Joseph (2002) stated, it is essential that the instructional designer become culturally sensitive, thus they can critically analyse the students' cultural background and adjust the ID setting accordingly.

The main purposes of this paper are: (1) To analyse the relationships between cultural dimensions of learning (Social Relationships, Epistemological Beliefs and Temporal Perceptions) and users' beliefs (Perceived Usefulness and Perceived Ease of Use); and (2) To determine whether there are significant differences between genders or study programmes considering defined constructs.

2 Literature review

Parrish and Linder-VanBerschot (2010) developed Cultural dimension of learning framework (CDLF) which is based on Hofstede's framework (2005), Nisbett's (2003), Levine's (1997), Hall's (1983) and

Lewis's (2006) study. Hofstede and Hofstede (2005) identify four layer of organization culture: values, rituals (practices), heroes and symbols. According to Parrish and Linder-VanBerschot (2010), values are presented by eight cultural dimensions (1 – *equality and authority*, 2 – *individualism and collectivism*, 3 – *nurture and challenge*, 4 – *stability seeking and uncertainty acceptanc*e, 5 – *logic argumentation and being reasonable*, 6 – *causality and complex system*, 7 – *clock time and event time*, and 8 – *linear time and cyclical time*). Authors claim that the values are the most persistent aspects of a national culture, and that practices or rituals are the reflection of adopted values.

CDLF is a diagnostic tool for recognizing culturally different individual's learning style and afterwards to apply the acquired knowledge to instructional design. The authors of the Framework consider that it is important to recognize differences in beliefs and behaviours, gain empathy towards users and adapt the design accordingly. However, they claim that aim of their framework is not to generalize differences between cultures, but to include their differences into the design if they exist, because as Lemke (1997) cited "humans are highly adaptable, and the situational influences on thought and behaviour are significant".

However, usage of CDLF is only found in a few studies. First example is from Hunt and Tickner (2015) who wanted to reveal the differences between participants of online teacher education courses at New Zealand university. Research has shown that participants mostly have similar preferences in learning and that simple linear scale from 1 to 10 can be probably widely interpreted and in that case inaccurate when it comes to multi-dimensional construct. Woodyard (2016) in her doctoral dissertation investigated autonomy supportive instruction in relation to students' motivational belief of value/usefulness of an ePortfolio. Results have shown that only three (uncertainty acceptance, event time and cyclical time) out of eight dimensions have significant impact on students' perception of ePortfolio usefulness.

On the other hand, there are a lot of technology acceptance theories and models and each has different benefits, but the TAM is a highly-cited model relevant for IS community (Chen et al., 2017). Davis (1989) based his Technology Acceptance Model on the Theory of Reasoned Action that observes individual's attitudes and predicts social behaviour. Perceived usefulness (PU) and perceived ease of use (PEOU) have fundamental importance because of their direct influence on system use. Users will consider a technology usable if it increases the efficiency of their work. Also, perceived ease of use will influence user's perceived usefulness because it depends on how much effort he should invest to work efficiently. TAM is the most frequently used model for studying e-learning systems (Aparicio, Bacao & Oliveira, 2016; Hsu & Chang, 2013) and therefore will be also used in this

research. The shortcoming of this model is that it assumes all use decisions are under the influence of usefulness and ease of use which are always measured in the same way (Olushola & Abiola, 2017).

3 Research model, hypotheses and research questions

This paper proposes and examines a conceptual model involving cultural dimensions of learning and users' beliefs. Hypotheses and research questions are created to get an insight into the relationship between constructs of the proposed model.

3.1 Research model

The proposed conceptual model is based on CDLF and two factors from TAM – PEOU and PU described in previous section. Davis (1989) defined perceived usefulness (PU) as "the degree to which a person believes that using a particular system would enhance his or her job performance", and perceived ease of use (PEOU) is considered as "the degree to which a person believes that using a particular system would be free of effort".

Hypotheses about relationships in the model (Figure 1) are presented below in accordance with the previously stated objectives and related literature.
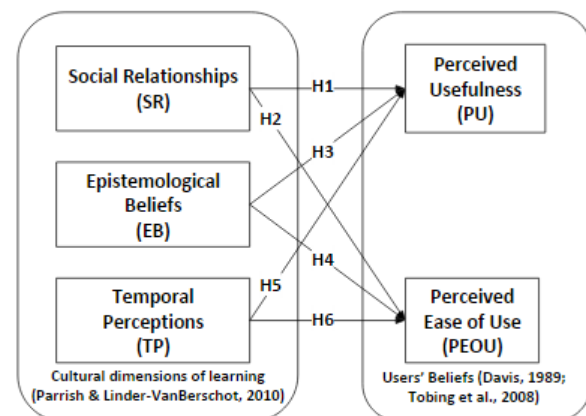

Figure 1. Conceptual model

3.2 Hypotheses and research questions

Cultural dimensions presented in the Figure 1 are cultural values which are considered to have greater impact on users' attitudes and perceptions than on behaviour and job performance (Taras, Kirkman & Steel, 2010).

The starting point was to examine the construct Social relationships (SR) which has three dimensions (Parrish & Linder-VanBerschot, 2010): equality-authority, individualism-collectivism, and nurture-challenge.

Table 1. An example of items and scale extracted from CDLF survey (Parrish & Linder-VanBerschot, 2009b)

INSTRUCTIONS: Circle the number that best indicates the level to which you agree with one or the other statement. Selecting 1 indicates that you strongly agree with the left-hand statement, selecting 10 indicates that you agree strongly with the right-hand statement. Selecting other numbers indicate lesser degrees of agreement with one side or the other.			
0	**Example**: Class discussions are critical for learning.	1 2 **3** 4 5 6 7 8 9 10 Selecting **3** indicates that the left-hand statement describes your opinion best, but only to a moderate degree.	Students should observe in class and not interact unless asked to do so.
1	Students should feel comfortable engaging in dialogue if they disagree with their teacher—it is part of learning.	1 2 3 4 5 6 7 8 9 10	Students should not openly disagree with or challenge their teacher—it disrupts learning.
2*	Class discussions or *LMS forum discussions* are for trying out new ideas, testing one's knowledge, and asking questions.	1 2 3 4 5 6 7 8 9 10	Before class discussions or LMS forum discussions, students should have mastered the course content so that they will have minimal questions.
3	Students should participate in the decision on what is discussed and what activities occur in class.	1 2 3 4 5 6 7 8 9 10	The teacher's assignments and activities defined in the syllabus should be followed without deviation.
Note. Item that is marked with asterisk is modified. New added words are italicized. The survey was conducted online.			

Equality-authority dimension discusses how teachers are treated by students during teaching and learning activities. Individualism-collectivism dimension interprets the interests of the individual and the group. Nurture-challenge dimension covers the topic of cooperation and security, on the one hand, and recognition and advancement, on the other. Tarhini (2013) stated that individualistic cultures unlike collectivistic will find easy to use modern technologies, but they will value the usability more. In relation to such findings, the first set of hypotheses was proposed:

H_1: *Social relationships have a significant positive relationship with Perceived Ease of Use.*

H_2: *Social relationships have a significant positive relationship with Perceived Usefulness.*

The construct Epistemological Beliefs (EB) is consisted of three dimensions: stability seeking-uncertainty acceptance, logic argumentation-being reasonable, and causality and complex systems. Research results of Woodyard (2016) have shown that students who are more accepting the uncertainty, will perceive an ePortfolio more useful. Therefore, it can be hypothesized that:

H_3: *Epistemological Beliefs have a significant positive relationship with Perceived Ease of Use.*

H_4: *Epistemological Beliefs have a significant positive relationship with Perceived Usefulness.*

The last construct, Temporal perception (TP), is consisted of two dimensions: clock time-event time, and linear time-cyclical time. Woodyard (2016) reported that if students are more event-time (right-sided dimension in the survey) and cyclical time oriented (right-sided dimension) they will consider an ePortfolio more useful. The last set of hypotheses was proposed as follows:

H_5: *Temporal Perceptions have a significant positive relationship with Perceived Ease of Use.*

H_6: *Temporal Perceptions have a significant positive relationship with Perceived usefulness.*

Next, research questions were defined to cover some issues that are outside of the conceptual model:

RQ_1: *Are there significant differences between males and females' perception of user's beliefs?*

RQ_2: *Are there significant differences between males and females' perception of cultural dimensions of learning – social relationships, epistemological beliefs and temporal perception?*

RQ_3: *Are there significant differences in perception of students of different study programmes (IBS and EE) in users' beliefs?*

RQ_4: *Are there significant differences in perception of students of different study programmes (IBS and EE) in cultural dimensions of learning?*

4 Research methodology

The main research involved 225 students within two different study programmes using the created questionnaire as the main tool for obtaining their opinion.

4.1 Sample

Data collection was limited to students of undergraduate study programmes (Information and Business Systems - IBS, and Economics of

Entrepreneurship - EE) at the Faculty of Organization and Informatics, University of Zagreb, in Croatia. The questionnaire was disseminated through two core courses that share the same background (topic), but one of the courses belongs to study programme IBS and another one to study programme EE. All students have voluntarily participated in the study.

4.2 Measurement instrument

A questionnaire was developed to gather information from students about their cultural preferences in learning and their perception of e-learning system (Moodle) they were using. It consisted of two parts:

- Cultural dimensions of learning framework (CDLF) (Parrish & Linder-VanBerschot, 2010): all constructs and associated items have been used, but adapted to existing teaching methods and materials.
- Technology acceptance model (TAM) (Davis, 1989): two core constructs (PU and PEOU) are used due to their nature which corresponds to the purpose of this research.

As already mentioned, in the first part of the questionnaire, CDLF instrument developed by Parrish and Linder-VanBerschot (2009a) was used. It consisted of 36 items arranged in eight cultural dimensions and three main constructs – Social Relationships (SR), Epistemological Beliefs (EB) and Temporal Perceptions (TP). Constructs SR, EB and TP represent independent variables that influence dependent variables (PU and PEOU) of the TAM model

The semantic differential scale (shown in Table 1) from 1 to 10 was used to answer the dichotomous questions (Woodyard, 2016). Score one means "strongly agree with the left-hand statement" and score ten means "strongly agree with the right-hand statement". The selection of other scores means that participant agrees less or more with the statements on the left or right side in the questionnaire. The SR differential scale contains items such as "Student should feel comfortable engaging in dialogue if they disagree with their teacher – it is part of learning" (on the left) and "Students should not openly disagree with or challenge their teacher – it disrupts learning" (on the right). Examples of the EB scale are "Failure is an opportunity to learn" (on the left) and "Failure should always be avoided because it means students are not learning and time is wasted" (on the right). The TP scale contains items such as "Repetition slows down learning" (on the left) and "Repetition is valuable for learning" (on the right).

The second part of the questionnaire is consisted of eight adapted TAM items (Table 2) that were focused on users' beliefs through perceived usefulness and perceived ease of use (Davis, 1989).

Respondents were asked to rate each statement on a five-point Likert scale: 1 (Strongly Disagree), 2 (Disagree), 3 (Neither agree nor disagree), 4 (Agree) and 5 (Strongly agree).

Table 2. Adapted TAM items
(Davis, 1989; Sumak et al., 2011)

Constructs	Items	
Perceived Usefulness	PU1.	I would find Moodle useful for learning.
	PU2.	Using Moodle enables me to accomplish tasks more quickly.
	PU3.	Using Moodle for learning increases my productivity.
	PU4.	If I use Moodle, I will increase my chances of getting knowledge.
Perceived Ease of Use	PEU1.	Moodle is unsuitable for my needs as a student.
	PEU2.	It was easy to learn how to use Moodle.
	PEU3.	Using Moodle requires a great deal of my intellectual effort.
	PEU4.	I consider that I do not need education in how to use Moodle.

5 Research results

In the first subsection, the demographic characteristics are presented using descriptive statistics. Next, the instrument was checked for validity and reliability. Finally, the results of hypotheses testing are shown.

5.1 Descriptive statistics

A total of 225 students participated in the online survey that was conducted via Moodle in April and May 2017. Student age varied from 18 to 29 years, with an average age of 19,6. Of the respondents, 50,2% (N = 113) were male and 49,8% (N = 112) were female. In respect to study programmes, 42,7% (N = 96) of students were from IBS, and 57,3% (N = 129) of students from EE study programme.

Table 3. Descriptive statistics of the constructs

Constructs	Mean (STD)	Mean (STD) M / F	Mean (STD) EE / IBS
Social Relationships (SR)	3.77 (0.93)	3.95 (.94)	3.64 (.92)
		3.58 (.89)	3.94 (.91)
Epistemological Beliefs (EB)	6.03 (1.12)	5.98 (1.10)	6.03 (1.11)
		6.09 (1.14)	6.04 (1.14)
	5.24 (1.09)	5.37 (1.12)	5.14 (.95)

Temporal Perceptions (TP)		5.11 (1.03)	5.37 (1.23)
Perceived Usefulness (PU)	4.04 (.67)	3.98 (.71)	3.98 (.70)
		4.10 (.64)	4.13 (.63)
Perceived Ease of Use (PEOU)	2.82 (.52)	2.83 (.55)	2.81 (.52)
		2.81 (.49)	2.84 (.52)
Note. M = Male; F = Female; EE/IBS = Study programmes			

Sample size (N = 225) yielded a respectable subject-to-item ratio (5,11:1) which was adequate for further analysis (Gray et al., 2007, MacCallum et al., 1999). The statistical software IBM SPSS Statistics for Windows, version 23, was used to calculate means and standard deviations for each construct which is shown in table 3.

Parrish and Linder-VanBerschot (2009b) recommended that means of answers should be grouped as following: *left orientation* is 1-3, *no strong preferences* is 4-7, and 8-10 is *right orientation* towards the dimension. The mean score (3.77) for the SR construct shows orientation towards left that includes more equality rather than authority. Other two constructs – EB (6.03) and TP (5.24) show no strong preferences towards any side of the scale. As Hunt and Tickner (2015) stated in their research of CDLF, it could mean that most respondents share the same opinion or the items do not express their beliefs.

Standard deviation represents how distant respondents' answers are from the mean (Field, 2009). The SR, PU and PEOU constructs show relatively small to medium standard deviation compared to their means, but two other constructs, EB and TP show relatively high standard deviation. The exception are students from EE study programme that were more consistent in their perception of temporal dimension (see Table 3).

Skewness and Kurtosis tests were performed to check whether the data is normally distributed. If not, it could impact the validity and reliability of the results (Tarhini, 2013). Table 4 represents calculated Skewness and Kurtosis values for each construct. From the results, it is evident that most values were distant from zero which indicated that the data was not normally distributed. The Wilcoxon rank-sum nonparametric test and boxplots are independent of underlying statistical distribution. Therefore, they were used to graphically describe non-parametric data.

Table 4. Skewness and Kurtosis values for constructs

	SR	EB	TP	PU	PEOU
Skew.	.03	-.15	.24	-.66	-.28
Kurt.	.25	1.66	1.00	1.46	-.70

5.2 Analysis of validity and reliability

The analysis of reliability and validity of the model was conducted in R. Cronbach's alpha was used to test the internal consistency of the items. First round of analysis across determined constructs and in total, 44 items, resulted with low alpha values (below 0.5) for most of the constructs except for PU where alpha was 0.858. To improve the reliability of the scale, it was needed to remove the items that were lowering internal cohesiveness.

First, the Kaiser-Meyer-Olkin (KMO) test for sample adequacy and communalities were used to remove the items that were lowering internal cohesiveness. Following suggestions from Field (2009) and Samuels (2016), a threshold was set as following: KMO > 0.5, and communality > 0.3. A total of 24 items were extracted during the factor analysis which have not satisfied the threshold and therefore, those have been dropped out from further study.

Next, the Principal Component Analysis (PCA) was conducted on the remaining 20 items with orthogonal rotation (varimax) to extract new constructs and to assess their validity (Table 5). The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO=.73 ('good' according to Field, 2009). All individual KMO values were > .54, which is above the acceptable cut-off score (Field, 2009). Therefore, four rotated components (RC) were retained in the final analysis.

Table 5. Results of PCA and Cronbach's alpha

Items	RC1	RC2	RC3	RC4
PU1	0.85			
PU2	0.85			
PU3	0.82			
PU4	0.77			
PE4	-0.47			
I10		0.67		
I09		0.65		
I12		0.62		
I08		0.61		
I07		-0.56		
I15			0.68	
I14			0.67	
I16			0.63	
I13			0.57	
I24			0.51	
I30				0.63
I33				0.62
I31				0.58
I35				0.51
I32				0.49
Cronbach's alpha	0.82	0.63	0.62	0.52

Although, the Cronbach's alpha was above 0.5, but did not exceed 0.7 for some constructs (see Table 5), it was decided to proceed with the analysis which is in line with recommendations from Hinton, McMurray & Brownlow (2014). Those authors provide a theoretical background which suggest that alpha values between

0.5 and 0.75 should be generally accepted as moderately reliable scale values.

The four factors (RCs) extracted with PCA were named as follows: "Perceived Usefulness", "Social Relationships", "Epistemological Beliefs" and "Temporal Perceptions".

The first four items from Perceived Usefulness (PU) and the fourth item from Perceived Ease of Use (PEOU) showed respectable internal cohesiveness according to Cronbach's alpha, and were therefore merged into the only one above-mentioned construct Perceived Usefulness. The construct Perceived Ease of Use alongside with the set hypotheses (H_1, H_3 and H_5) have been dropped-out from further analysis.

Three remaining extracted factors matched, in respect to their items, the original constructs from CDLF instrument.

Having a valid and reliable instrument, it was possible to approach hypotheses testing.

5.3 Summary of hypotheses testing

Pearson correlation coefficient was used to measure the relationship between variables and to test hypotheses. Values greater than ($\pm$).5 indicate high correlation, ($\pm$).3 medium correlation and ($\pm$).1 low correlation (Field, 2009). In addition, if p-value is below 0.05 then the correlation between variables is significant.

After the Pearson's correlation analysis was conducted, hypotheses H_2, H_4 and H_6 were rejected, because no positive significant relationship between the constructs was found (Table 6). Only a single significant, but low and negative correlation was indicated:

- H_2: Social relationships and Perceived usefulness (p = .023 < .05; Pearson Correlation = -.15); A positive change in the first variable causes negative change in the second variable (Field, 2009).

Other results showed no significance and correlations between variables:

- H_4: Epistemological Beliefs and Perceived usefulness (p = .24 > .05; Pearson Correlation = .08);
- H_6: Temporal Perceptions and Perceived usefulness (p = .53 > .05; Pearson Correlation = -.04).

**Table 6.** Results of hypotheses testing

| Hypothesis	p-value	Pearson correlation	Result
H_1	/	/	N/A*
H_2	.023	-.15	Rejected
H_3	/	/	N/A*
H_4	.24	.08	Rejected
H_5	/	/	N/A*
H_6	.53	-.04	Rejected
* Hypothesis was excluded from testing due to limitations in the initial instrument (see subsection 5.2).			

Next, results were further analysed to answer the research questions set in the beginning of the research.

The distribution of the mean scores of respondents is shown in the boxplots. Comparing the males and females in the boxplot (Figure 2), both have similar low and high scores. Although, the value of median is higher for females which means they have more positive perception of user's beliefs than male students.
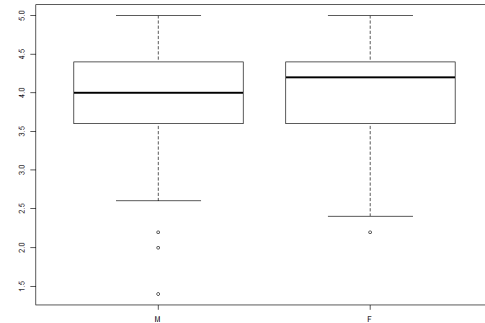

Figure 2. Boxplot of user's beliefs scores by gender

Males students have higher scores, and females have lower scores in social relationships shown in boxplot (Figure 3). The median values are also different for each gender. The results can be interpreted as females have greater tendency towards equality, and males towards authority in social relationships between lecturers and students.
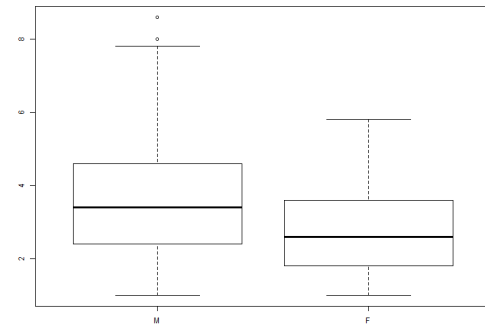
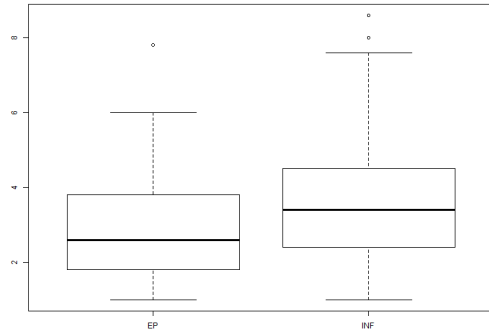**Figure 3.** Boxplot of social relationships by gender

Boxplot in Figure 4 represents the females' perception of temporal dimension that resulted with lower scores, and males with higher scores. Female students perceive time as a destination and goals, and males as the cycles where deadlines are important.
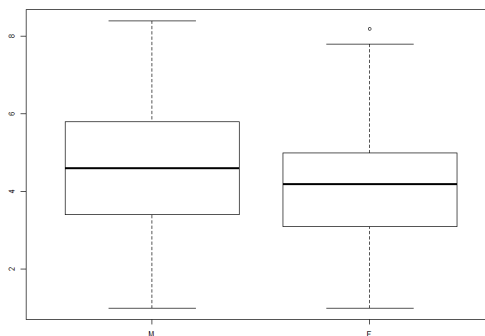
Figure 4. Boxplot of temporal perception by gender

In Figure 5, left box of the boxplot represents the EE, and the right IBS study programme. IBS students have higher scores towards authority dimension, and EE students have lower scores towards equality in the academic society. Their median values differ in a way they are higher for students from IBS study programme.

Figure 5. Boxplot of social relationships by study programme

Afterwards, non-parametric Wilcoxon rank-sum tests were computed to make final reflection on the four research questions:

RQ1. The perception of user's beliefs between female and male students is significantly different (W= 5310.5, p = .04, p < .05).

RQ2. The perception of social relationships between female and male students is significantly different (W = 8106.5, p = 0.00027, p < .05). There is also a significant difference between males' and females' perception of temporal dimension (W = 7646, p = 0.007, p < .05). But, no significant differences were found between gender's perception and epistemological beliefs (W = 6121, p = 0.67, p > .05).

Students of different study programmes have a significantly different perception of social relationships in teaching and learning environment (W = 4610.5, p = 0.001, p < .05). However, there was no significant difference found between user's beliefs, epistemological beliefs and temporal perception with different study programmes (UM: W = 5696.5, p =.30; EB: W = 6578.5, p = 0.42, TP: W = 5342, p = 0.08; in both cases p > .05).

6 Discussion

The research results are very much in line with the ones from Hunt and Tickner (2015) who also assessed the reliability of the eight sub-scales of CDLF. Their results showed poor correlations between scores on items of the CDLF's eight dimensions and they have also indicated a poor reliability of the instrument. However, they limited their findings due to a small sample size (112 students) and mostly female population. On the other hand, those limitations were minimized in this study, but the similar results were obtained. Besides, students' responses were not consistent within each dimension (data were not normally distributed) which can indicate their different preferences in learning. Also, the questionnaire was conducted only among Croatian students, and it would be interesting to extended it to international contexts where are highlighted cultural biases.

Furthermore, it was needed to carry out major modifications to improve the reliability of the measurement instrument which resulted in omitting one major construct of TAM. Consequently, hypotheses involving Perceived Ease of Use (H_1, H_3 and H_5) could have not been further tested.

Other three hypotheses (H_2, H_4 and H_6) were rejected due to low and negative (H_2) or no significant relationship (H_4 and H_6) between constructs (social relationships, epistemological beliefs, temporal perceptions in relation to perceived usefulness). On the other hand, the perception of user's beliefs, social relationships and temporal dimension is significantly different between male and female students. Also, the perception of social relationships between students of different study programmes is significantly different.

It should be pointed out that female students showed greater tendency towards equality, and male towards authority in social relationships between lecturers and students. Furthermore, it was also shown that females have greater tendency towards equality, and males towards authority in social relationships between lecturers and students.

In the end, summative results of students' responses can be useful for the learning community to adapt virtual learning environment (VLE) and develop new teaching strategies and tactics. Cultural student backgrounds and their learning preferences should be incorporated into the instructional design of VLE, which is often avoided in the name of globalization. On the other hand, students can gain insights into their own preferences and compare them with those of peers.

In future research, it would be worth comparing students from different study programmes at other universities and analyse differences between males' and females' preferences in learning.

7 Conclusion

Digital technologies have removed the boundaries between different societies and their knowledge sharing. Nowadays, educators talk more about individual differences above cultural, which can be also seen from various students' responses in the survey. Some personalities (responsibility, emotional stability, being organized, etc.) are highly appreciated despite of their cultural background.

Future studies should consider this validated instrument for inquiring cultural differences in learning according to three main dimensions – social relationships, epistemological beliefs and temporal perceptions. Sub dimensions should be avoided due to the lack of reliability between items.

It is not a simple matter to adapt the teaching to each student considering his cultural differences. However, it is important for tutors and LMS designers to be aware of different cultural values, especially those which may seem controversial or even offensive. In such sense, this work can help tutors and teachers to approach students' preferences taking into account cultural differences especially in case of large, open universities which enrol students with highly diverse cultural background.

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