International Journal of Research in Open Educational Resources
المجلة الدولية لبحوث المواقع التعليمية المفتوحة

How to motivate formal students and informal learners to participate in Open Content Educational Resources (OCER)?

Dr. Amal Hanna, PhD
Managing Editor
International Journal of Research in Open Educational Resources
Amal.Hanna@ResearchOERJournal.net

Abstract

Background & Aims: Motivation positions itself in the center of educational psychology, because it is vital to stimulate learning behavior either for formal students or informal learners whether they are in K-12, university or at post-study level. In the Self-Determination Theory (SDT), learners, are motivated from within, by enjoyment and curiosity; while many others are often motivated by external factors including attaining ego-enhancement or even to avoid guilt. There is a lack of knowledge, however, in relation to measuring the motivations for Open Content Learning Activities (OCLA), and especially whether such motivations can be understood using SDT. A model that integrates Goal Valence Theory (GVT) and Self-Determination Theory (SDT) was proposed to provide a systematic tool for investigation.

Methods: Item response theory was used to design the online questionnaire scale that assesses OER motivations. One large-scale survey was used to explore motivations to participate or otherwise to OCER. Participants were recruited by approaching subscribers to *Wikibooks*' email list as well as advertisement published on *Wikibooks* website.

Results & Findings: (Confirmatory) Factor Analysis was used to explore motivations to participate and not-to participate into OCER. Results, of 262 responses, suggested that within intrinsic or extrinsic factors, there are approach and avoidance tendencies; and that SDT cannot be considered away from Goal Valence Theory (GVT) – which adds an important layer to the SDT. Results show the co-existence of intrinsic & extrinsic motivations and approach & avoidance motivations. Results suggest that self-learners are more likely to be excited and have their desire to learn and other endorsed values, while students likely to be "pushed" or encouraged to write and contribute to OCER until they enjoy/value what they are doing. Also, providing support and visible instructions/help may reduce any lack of confidence. Among other discussed findings in this paper, future research should consider a longitudinal experimental study that may explore how learning activities could be designed to enhance engagement and learning outcomes.

Keywords: Wiki, Online Volunteering, Open Educational Resources (OER), Open Content Learning Activities (OCLA), Formal & Informal e-Learning, Motivation, Self-Determination Theory (SDT), Goal-Valence Theory (GVT), Approach, Avoidance, Intrinsic, Extrinsic.

Acknowledgement: The author, Dr Amal Hanna, would like to thank Assoc. Prof. Jacques Metzer for his efforts and sincere advice during the PhD study in the University of South Australia.

Research Funding: This paper was part of PhD Research (Ethics Protocol Approval P244/08), which was fully funded by the University of South Australia on Full International PhD Scholarship.

How to motivate formal students and informal learners to participate in Open Content Educational Resources (OCER)?

Introduction

Open Content Educational Resources (OCER) include wikis, blogs, and online forums that are used for educational purposes and to share educational contents between informal learners and formal students; and their contents are ever updating and reshaping in a process that called "*produsage*", and in which content contributors are called "*produsers*". It is important to study motivations for volunteering into open content educational resources if we aim to enhance participation of both informal learners and formal students, those who seek online for engaging learning materials.

Online volunteering

Online volunteering has increased exponentially, with many promises to organisations [1; 2]. There are three forms of online volunteering: volunteering to Open Source Software (OSS) such as Linux and Firefox, volunteering to Open Content Webpages (OCW) such as Wikipedia and blogs; and volunteering to Open Educational Resources (OER) such as *Wikibooks* and Connexions. Similar to Wikipedia, *Wikibooks* is a one of Wikimedia Foundation (WMF) projects that hosts a collection of electronic open-content textbooks on a variety of different subjects [3]. *Wikibooks* depends completely on online volunteers, or 'Wikibookian' [4], who work collaboratively, using wiki tool, to write textbooks. *Wikibooks* is an Open Educational Resources (OER), where its users are contributing contents, and thus can also be called *OER produser* [5]. Those open content *produsers* work on the same document regardless of their cultural background; however their patterns of contribution differ according to their cultural background [6].

Because of motivation is a vital component in stimulating learning behavior [7], it is important to understand contribution motivations of OER *produsers*, to be able to stimulate them to enhance their motivations, and thus increase their contributions. Having said that, there is a lack of knowledge, however, in relation to measuring the motivations for Open Content Educational Resources (OCER); and more specifically measuring reasons for OER participation and reasons of not contributing contents to OER.

Understanding volunteerism in real and virtual organisations

To be able to explore OER motivations, we need to understand volunteering motivations in general, whether in real-world organisations (RWO) such as Red Cross and Red Crescent, and/or virtual organisations such as OSS and OCW. Clary et al. [8] were able to generate reasons to volunteer, as outlined in Volunteer Function Inventory (VFI). These reasons were tested using a survey that constituted one large-scale of these items. Data retrieved by the survey, from participants who volunteer in real-world organisations, were analysed using principal component analysis revealed six functions of volunteering that reflect psychological and social dimensions. These are: 1) *values* relating to altruistic and humanitarian concerns for others; 2) *understanding* of opportunities that permit new learning experiences and practices; 3) *social* relationships that facilitate sharing interests; 4) *career*-related benefits that may be obtained from participation in volunteer work; 5) *protective* reasons through addressing personal problems; and 6) *enhancement* of the ego. Indeed, not all volunteers to RWO have the freedom to make a decision to volunteer, and that is can be in the form of a *request*, which may be considered as mandatory volunteerism [8; 9]. Previous research found some volunteers are motivated by *religious values* [10].

However, reasons to volunteer (commonly known as "contributions") in open content websites (OCW) or open source software (OSS) might be different. Nov [11], for example, has found that in addition to the above six factors, Wikipedia contributors are also motivated by *ideology* of the value of making knowledge freely available to all and *enjoyment* of writing to Wikipedia. Although Nov [11] has also attempted to distinguish between *ideology* and *value*, it can be said, however, that is difficult, theoretically and practically, to distinguish between ideologies and values [12]. It must be noted that volunteering behaviour is not always a planned action, and can be subjected to a *sudden need*. This explains why newcomers to Wikipedia become contributors by participating in some simple tasks such as correcting vocabulary [13].

While above research has identified factors of volunteerism in OCW, other researchers has gone further, and classified reasons for contribution to OSS into intrinsic and extrinsic motivations. For example, motivations for contribution to open source software, like Linux and Firefox, can be intrinsic, in the forms of programmers' enjoyment and altruism manifested in helping behaviour [14], or extrinsic, such as financial rewards and building professional status [15]. Programmers to OSS act consistently within the norms of their OSS community and they feel they are obliged to contribute to OSS, so that many others can find and use free OSS [*obligation toward community*] [16], or they desire for peer *recognition* [17]. Although it has been questioned why many volunteers spent time and efforts without pay [16], those volunteers would not donate their efforts without having time to do so, or perhaps for the purpose of *killing time*. For example, administrators in Wikipedia (as an OCW) who have more personal time and have weaker social connections tend to have higher motives for being administrators [18]. An interesting comment made by a Wikipedia's administrator was "It's the best way I've found so far to kill time while I'm at work" [19]. Although the attempt above to identify possible reasons to volunteer into RWO, OSS, and OCW, it would be impossible to come up with *all* definite reasons.

Understanding motivation

There are two main theories that intend to explain human motivations, whether to initiate any behavior or not to behave. These two theories are self-determination theory (SDT) which classify tendencies to act as "motivation" and tendencies not to act as "amotivation" – from the cognitive perspective, and goal-valence theory (GVT) that classify these two tendencies, respectively, as "approach" and "avoidance" – from the behaviourist perspective. SDT classified motivations into a continuum from intrinsic motivation, extrinsic motivation to amotivation. There is disagreement, however, about the meanings of intrinsic and extrinsic motivations in the literature that discuss volunteering behaviour. On the one hand, while intrinsic motivation may mean help-self [20], other meanings might include reasons that relate internally to individuals themselves [21]. On the other hand, while extrinsic motivation can mean help-others [20], other meanings include reasons related to contextual antecedents [21]. However, there is a psychological perspective of conceptualisation of intrinsic and extrinsic motivation, which is established on the psychology of cognition. Deci and Ryan [22], founders of self-determination theory (SDT), argued that motivation, that energise and direct behavior, can be autonomous or controlled.

Autonomous motivation consists of intrinsic motivation (enjoyment) and first two types of extrinsic motivation: identified motivation in which individuals have identified with an activity's value, and integrated motivation in which individuals ideally will have a value integrating it with their sense of the self. In contrast, controlled motivation consists of external regulation in which an individual's behaviour is a response to external contingencies of punishments or rewards, and introjected motivation in which the regulation of action has been partially internalised and is energised by factors such as shame avoidance, motive approval, self-esteem contingency and ego-involvement. By contrast, while autonomous and controlled motivations energise behaviour, individuals may lack the intention to motivate and behave which is referred as amotivation. Moreover, the relationship between learning motivation and self-regulation is positively correlated. More specifically, students (or learners) with high motivation in learning tend to apply appropriate self-regulation skills in learning tasks [23]. Deci and Ryan's [22] model of motivation can be presented in Table 1:

Table 1: Factors of motivation and amotivation according to Deci and Ryan [24]

Motivated individuals					Unmotivated individuals
Autonomous Motivation			Controlled motivation		
Intrinsic motivation	Extrinsic motivation		Extrinsic motivation		Amotivation
	Integrated motivation	Identified motivation	Introjected regulation	External regulation	

These motivations model, although cognitive, it is associated with goal orientation – explaining the behaviourist perspective of motivation whether to approach or to avoid achieving any goals. In approach motivation, behaviour is directed to/by a desirable/positive event or outcome, while in avoidance motivation behaviour is directed to/by undesirable/negative outcomes [25]. In particular, Koestner & Losier [26] have linked the conceptual characteristic of the introjected, identified, and intrinsic regulatory styles with goal orientation, in which they are working in a '*complementary fashion*'. For example, Vansteenkiste et al. [27] found that intrinsic goal of community participation is more valued than extrinsic goal of social recognition. Furthermore, Koestner & Losier [26] found that while intrinsic motivation focuses on excitement of short term goals, internalisation focuses on endorsed values that ensure commitment in the long run. Covington and Müeller [28] did not agree, however, with Deci and Ryan's [29]distinction between intrinsic and extrinsic motivation because this distinction has an inherent assumption that intrinsic and extrinsic motivational processes are not only separable but also incompatible.

Table 2: Regulatory styles and goal orientation adapted from Koestner & Losier [26]

	Regulatory style		
	Introjection	**Identification**	**Intrinsic**
Locus of causality	External	Internal	Internal
Regulation guide	Conditional self-regard	Identity and value	Excitement emotions
Goal orientation	Approach/avoidance (conflicted)	Approach (long term/ outcomes)	Approach (short term/ process)

Ryan and Deci [24] defined amotivation as a status of lack of intention to act, whether individuals do not want to act at all, or acting passively with no sense of intent. Amotivation refers to a state in which an individual cannot perceive a relationship between their behavior and its subsequent outcome [30]. The study of amotivation is, however, neglecting the complexity of motivational deficit beyond the one-dimensional model [31; 32]. Previous research aimed to explore the dimensionality of amotivation found that it consists of four dimensions: ability beliefs, effort beliefs, values placed on the task, and characteristics of the task [30; 33]. It is argued that these above reasons can be theoretically classified into two groups: a) inability to act, which consists of lack of capabilities and skills to perform tasks, and b) lack of desire to act, which makes individuals unwilling to perform a task due to lack of perceived competence and/or negative belief towards the value of an activity or its outcomes. Having said that, it remains unknown the reasons that hinder individuals from contributing to OCW and/or OER.

Building the theoretical model

The existence of opposing tendencies to approach versus avoidance may provide an important mechanism for prioritizing an action. An individual faces, in every situation, a conflict between varieties of responses which cannot all be made at the same time. The approach-avoidance distinction is viewed by Elliot and Covington [34] as fundamental to the study of human behaviour. Elliot and Thrash [35] found that approach and avoidance temperaments are systematically linked to achievement goals. However, while approach goals are easier to assess since they lead people to focus on their desirable outcomes, avoidance goals are difficult to monitor [36].

Koestner & Losier [26] argued that three regulatory styles of SDT, introjection, identification, and intrinsic motivations toward goals can be either through avoidance, the conflict between approach and avoidance, or approach respectively (see Table 2). If the strength of avoidance is increased, with little approach elicited, there will be almost no conflict and thus they accept failure. Moreover, choices between goals which elicit tendencies towards approach have no signs of conflict; while choices between undesirable goals cause conflict. Avoidance itself does not necessarily lead to behavioural withdrawal; it can be passive avoidance in the form of physical or mental withdrawal or active avoidance in the form of displaying less-free choice persistence [37]. Avoidance achievement motivation includes both motivation to avoid failure (or negative outcomes) and motivation to avoid a fearful (undesired) situation [38]. Yperen [39] was able to make, however, a link between approach-avoidance and the goal orientation, as he found that approach scales of achievement goals (or positively-valenced dependent variables) are related to self-oriented perfectionism, while avoidance scales of achievement goals (or negatively-valenced dependent variables) are related to socially-prescribed perfectionism.

Covington and Müeller [28] asserted that 1) intrinsic motivation never exists by itself; 2) individuals who seek both intrinsic and extrinsic rewards (considering them to be independent) are on a one continuum; 3) there is evidence of positive relationship between intrinsic and extrinsic motivation; and 4) extrinsic rewards do not always lead to a reduction in intrinsic motivation.

Although previous research [28; 40] aimed to integrate multi-dimensional motivation and their outcomes, in the current paper it is argued that the dimensional framework can be extended beyond the 3 x 2 framework [40]. To conclude, the available knowledge in the field of motivation tells us that:

1. The distinction between intrinsic and extrinsic motivation is not realistic because they can co-exist.
2. The distinction between approach and avoidance motivation is not realistic because they can co-exist.
3. The dimensional framework of motivation can be extended beyond the 3 x 2 framework, suggesting that the current framework is not enough to explain deeper human motivation.
4. There are some attempts to integrate motivation and amotivation (of SDT) and approach and avoidance (of GVT) together, with behaviours occur in the physical world.

Although self-determination and goal-valance models have been tested and validated, such models are not yet tested to explain motivations for contribution to open content educational resources. Moreover, if such models can be integrated together to build the theoretical model for this study, how does such model look like? The integration between SDT and GVT, as illustrated in Table 3, is argued to help establishing the theoretical foundation that will be used to design the instrument that will be used to explore approaching and avoiding OER participation.

Table 3: A model combining SDT and GVT

Motivation					
Amotivation		Extrinsic Motivation		Intrinsic Motivation	
Negative beliefs	Inability	Reward and Punishment	Ego-enhancement and Guilt reduction	Endorsed values	Enjoyment

The aims of this study are to explain motivation both to contribute and not to contribute to open educational resources; as well as assessing whether the proposed model help providing a systematic tool that can be used to explain OER motivation? In more specific words, how the proposed model above help in designing the scale that will be used to assess motivations for contribution and non-contribution to open content educational resources? What the analysed data can tell us about how to motivate formal students and informal learners to participate in open content learning activities?

Method

Instrument: Web-based survey

Educational self-reported surveys are commonly used to assess learning motivations and achievement [41]. Web-based surveys have been used in much research in the field of open source software and open content webpages [11; 16; 42; 43]. Furthermore, the web-based survey is an ideal tool for potential participants who are geographically distributed around the globe [44; 45]. The scale items were designed using Item Response Theory – in which each item is meant to reflect only one variable. Items that reflect reasons for contribution are: 1) The desire for enjoyment, 2)The desire for socialisation, 3) Helping disadvantaged, 4) Teacher encouragement, 5) Ideology of knowledge freedom, 6) Religious teachings, 7) Others do not have, 8) The desire to publish, 9) Killing time, 10) Expressing opinion, 11) Sudden need, 12) Value: making knowledge available, and 13) The desire to learn.

These mentioned items are aimed to reflect intrinsic motivation (enjoyment & endorsed values), and extrinsic motivation (ego-enhancement/guilt-reduction & gaining rewards/fears of punishment). Items that reflect reasons for non-contribution are: 1) Lack of financial award, 2) Lack of technical skills, 3) Negative beliefs towards the website, 4) Negative beliefs towards the education system, 5) Lack of knowledge, 6) Negative beliefs towards the volunteerism, 7) Our society does not value voluntary work, 8) Selfishness: preference to reading, 9) Lack of support (no clear structure), 10) Lack of time, 11) Socialisation is more important, 12) Lack of internet access, 13) Lack of confidence, 14) Unreasonable excuses, 15) Hating demands, and 16) Negative beliefs towards contribution. These items are aimed to reflect both inability and other negative beliefs towards the self and community. Items that represent reasons for contribution and reasons for non-contribution are, thus, representing the proposed theoretical model outlined in Table 3 above. Before collecting the data, Ethics Protocol Approval P244/08 was obtained from the Research Ethics Committee at the University of South Australia.

The online survey was available in two languages (Arabic and English) to allow participants from the Eastern Arabic cultures and Western English cultures to easy understand and respond to the survey – a taken consideration that would increase the response rate and reduce misinterpretation (especially if these two cultures are of the author's concern – as discussed in the other papers). The survey consists one large scale that include items/statements representing the proposed model mentioned in Table 3. The scale is in the form of 5-point Likert-type, in which responses range from strongly agree (+2) to strongly disagree (-2).

The sample

Wikibooks is considered an open content educational resources, since it include learning materials that available online, and where anyone (including learners and students) can contribute their content – those are motivated to write. However, there are many others who only read the available learning materials. Invitation emails were sent to *Wikibooks*' email list subscribers (those who read and/or write). To deal with an expected low rate of response, a website advertisement was published on the Arabic and English version of *Wikibooks* website.

Data analysis and results

Respondents

Respondents to the survey (N= 262 after excluding incomplete responses) can be classified according to their demographic factors as in Table 4:

Table 4: Demographic details of the participated Wikibookians

Demographic Factor	Classification	%
Gender	Female	26
	Male	71.8
	*Unclassified	2.2
Age	<18	3.1
	18-24	40.8
	25-34	30.2
	35-45	11.1
	>45	14.5
	*Unclassified	0.3
Education Level	Primary Education	3.8
	Secondary & Trade Education	24.4
	University Education	44.7
	Post-study Education	23.3
	*Unclassified	3.8
Education System	Public Education	74
	Private Education	19.5
	*Unclassified	6.5
TOTAL	N	262

Note: *Those who did not answer questions related to above factors were not excluded from the data set to avoid losing responses. These unanswered questions were considered missing from the analysis.

Those respondents can be classified into two groups – as represented in Table 5: 1) those who saw themselves as contributors, who answered either, a) both reasons for contribution and reasons of non-contribution scales, or b) those who answered the reasons for contribution scale only; 2) those who saw themselves non-contributors who answered the reasons for non-contribution scale only.

Table 5: Respondents (N=262) to the web-based survey classified by level of participation

Level of Participation in *Wikibooks*	**N**	**%**
Contributor, but	213	~81%
Contributor	18	~ 7%
Non-Contributor	31	~12%
TOTAL	262	100%

There are a number of inferences can be made from Table 4 & Table 5:

1. The largest age groups using *Wikibooks* are 18-24 years old and 25-34 years old, which indicate they are higher education students.
2. Wikibookians are mainly highly educated: those who have university degree/education and post-university degree/education constitute more than ¾ of the total sample
3. *Wikibooks* is male-dominant (~ 72%).
4. Wikibookians are mainly those of low socio-economic background (those who received public education).
5. The majority of research participants (81%) are motivated to write to *Wikibooks*, but there are other reasons that hinder them or reduce their participation.

Data analysis

These two groups (contributors & non-contributors) were analysed as one sample. Reliability test was conducted first to ensure the internal consistency of the scale. Factor analysis followed by confirmatory factor analysis [46] were used. These exploratory and confirmatory factor analysis have been extensively used together [19; 47; 48].

The internal consistency for the total scale, Cronbach's Alpha, is 0.76. Factor analysis was conducted, using SPSS software, on the total scale (two subscales A and B) in order to ensure that items of each of the two subscales are inter-correlated. Principal Component Analysis (PCA) revealed that the most items of subscale A loaded on component two, while items of the subscale B loaded on component one. Reliability test was conducted again for each subscales: Alpha coefficients were 0.74 for subscale A (the 13 items of reasons for contribution), and 0.84 for subscale B (the 16 items of reasons for non-contribution) – indicating good internal consistency. The result of Varimax rotation conducted on the total scale confirmed that items of subscale A were inter-correlated and loaded on component two, while items of subscale B were inter-correlated and loaded on component 1 (see Table 6).

Table 6: Reasons for contribution and non-contribution to *Wikibooks* as clustered by Varimax rotation

Scale items	Component	
	Avoidance	Approach
Scale A	**1**	**2**
I want to have fun	.106	.511
My friends do so	.082	.514
Poor people can use these free books	.117	.549
My teacher asked me to do so	-.121	.419
I believe that information should be free	.074	.373
My religious teaching asks me to help others	-.088	.643
Others do not have the expert knowledge that I have	-.125	.373
I cannot find other places to publish my work	-.219	.566
I'm lonely and have free time	-.189	.442
I want to express my personal opinions	-.171	.640
Logical and grammatical errors have to be corrected	-.040	.065
There is a lack of information resources in my language.	-.083	.557
I contribute because I want to learn	.239	.455
Scale B	**1**	**2**
No financial reward	.652	-.164
I can't use wiki	.549	-.156
This is un-helpful website	.620	.040
Our educational system (institution) does not (or cannot) adopt this technology as a part of learning process	.575	-.249
I don't have a knowledge base in any suitable topic	.466	-.029
Contribution is useless unless others know of this website	.597	.123
Our society does not value voluntary work	.533	-.214
I prefer reading to writing	.372	.082
There is no clear structure for textbooks	.684	-.023
I have other hobbies and interests that take up my time rather than contributing to wiki	.451	.407 [a]
I prefer socializing with family and friends rather than setting on the computer to contribute	.371	.347[a]
Others do not have an internet access or do not know of this website	.615	-.217
I do not feel confident	.496	.075
I prefer to write in my own language	.451	-.262
As this is voluntary work, orders to contribute are not acceptable to me	.637	-.058
This is not my job to write textbooks	.647	.067

Note: [a] items that were loaded into the two components were not excluded from the analysis, because they were loaded more heavily on component 1 (reasons for non-contribution).

Reasons for contribution (Approach)

The 13 items of scale A were also subjected to a Principal Component Analysis. The analysis revealed that most items were loaded on one component except one item which was excluded from the subsequent Varimax rotation. Since the theoretical framework discussed earlier suggests that there are *two* groups, labelled as 'intrinsic reasons' and 'extrinsic reasons', within motivational reasons for contribution (approach), two components were extracted in the Varimax rotation. The result shows that 10 out of the 12 remaining scale A items were distributed between component 2, revealing intrinsic reasons for contribution, and component 1, revealing extrinsic reasons for contribution (see Table 7).

Table 7: Rotated components matrix of reasons for contribution

Items	Component	
	1 Extrinsic	2 Intrinsic
I want to have fun	.237	**.525**
My friends do so	**.666**	.062
Poor people can use these free books	.103	**.778**
My teacher asked me to do so	**.689**	-.102
I believe that information should be free	-.106	**.708**
My religious teaching asks me to help others	**.461**	.426
Others do not have the expert knowledge that I have	.341	.214
I cannot find other places to publish my work	**.679**	.129
I'm lonely and have free time	**.634**	.025
I want to express my personal opinions	**.549**	.349
There is a lack of information resources in my language.	.371	.379
I contribute because I want to learn	.057	**.629**

Note: Loadings than less than 0.45 were excluded from the further analysis

Items believed to measure intrinsic reasons for contribution were subjected to a further Varimax rotation which revealed that there were two factors: these were labelled 'enjoyment (fun)' which loaded on component 2, and 'endorsed values' which loaded on component 1 (see Table 8).

Table 8: Rotated components matrix for intrinsic reasons for contribution

Items	Component	
	1 Integrated values	2 Enjoyment
I want to have fun	.110	**.968**
Poor people can use these free books	**.686**	.405
I believe that information should be free	**.811**	.015
I contribute because I want to learn	**.730**	.110

Note: Loadings than less than 0.45 were excluded from the further analysis

Items believed to measure extrinsic reasons for contribution were subjected to a further Varimax rotation. According to the theoretical model, it was proposed that extrinsic reasons include external reinforcement (rewards/punishment) and introjected regulations (ego-enhancement/ guilt-reduction). Thus Varimax rotation was used to extract two components which revealed that there were two factors: items loading on component 1, which was labelled as 'ego enhancement', and items loading on component 2, which was labelled as 'external regulation' (see Table 9).

Table 9: Rotated components matrix for extrinsic reasons for contribution

Items	Component	
	1 Ego-enhancement	2 External regulation
My friends do so	.194	**.817**
My teacher asked me to do so	.149	**.856**
My religious teaching asks me to help others	**.700**	.076
I cannot find other places to publish my work	**.623**	.282
I'm lonely and have free time	**.525**	.334
I want to express my personal opinions	**.801**	.085

Note: Loadings than less than 0.45 were excluded from the further analysis

Reasons for non-contribution (Avoidance)

As highlighted in Dunn, Lo, Mulvenon, & Sutcliffe [49], psychometric analyses of survey instruments require reverse-coding for negatively worded items to avoid systematic measurement error that distorts analyses and the interpretation of the results, the author of this paper has reverse-coded negatively-worded items before proceeding with any analyses.

All 16 items of subscale B were subjected to factor analysis, the result showing that these items were heavily loaded on component 1 (which suggested no deletion). Varimax rotation was instructed to extract 2 components, and the result did not come with interpretive factors –or as suggested in the theoretical model. Thus, Varimax rotation analysis was conducted a few times using different numbers of extracted components; and when Varimax was instructed to extract six components, an optimum solution (interpretive components with minimum deleted items) was reached. Fifteen out of sixteen items (one item did not reach the set criterion loading of .45) were distributed among six components which are labelled as 1) Negative views toward contextual system, 2) Lack of confidence; 3) Negative views toward volunteering; 4) Distracting interests; 5) Negative views toward wikis and 6) Irrelevant excuses. These extracted 6 components are presented in Table 10.

Table 10: Rotated Components matrix for Reasons of non-contribution scale

Items	Component					
	1	2	3	4	5	6
Our society does not value voluntary work	**.851**	.056	.127	.019	-.041	.184
Our educational system (institution) does not (or cannot) adopt this technology as a part of learning process	**.694**	.200	.060	-.055	.274	.146
I do not feel confident	.165	**.743**	.219	.065	-.016	.029
I prefer reading to writing	.016	**.741**	-.075	.157	.009	.195
I don't have a knowledge base in any suitable topic	.044	**.669**	.160	-.009	.391	-.089
There is no clear structure for textbooks	.393	**.440**	.125	.120	.228	.383
This is not my job to write textbooks	.077	.159	**.783**	.233	.107	.162
As this is voluntary work, orders to contribute are not acceptable to me	.100	.119	**.762**	.090	.107	.350
No financial reward	.442	.041	.526	.138	.341	-.001
I prefer socializing with family and friends rather than setting on the computer to contribute	-.071	-.008	.526	**.834**	.021	.006
I have other hobbies and interests that take up my time rather than contributing to wiki	.019	.374	.251	**.735**	-.019	-.018
Contribution is useless unless others know of this website	.421	-.025	.130	.588	.373	.200
I can't use wiki	.073	.165	-.063	.016	**.837**	.109
This is un-helpful website	.440	.019	.113	.147	**.551**	.037
I prefer to write in my own language	.140	.082	.246	-.013	-.083	**.797**
Others do not have an internet access or do not know of this website	.244	.082	.276	.071	.383	**.662**

Note1: Component 1 is negative views toward contextual system. Component 2 is lack of confidence. Component 3 is negative views toward volunteering. Component 4 is distracting interests. Component 5 is negative views toward wikis. Component 6 is irrelevant excuses.
Note2: Loadings than less than 0.45 were excluded from the further analysis

Discussion

The distinction between approach and avoidance has very deep theoretical roots in the achievement motivation literature, especially in the field of education and student motivation [35; 50; 51; 52]. Recent studies have attempted to explore volunteering motivations in real-world organisations (see for example: [9; 53; 54; 55; 56]). Moreover, reasons for online volunteering have been discussed, and that include contributing into open content web pages [11; 19; 57; 58], open source software [16; 42; 59] and open educational resources [60; 61; 62; 63; 64]. However, previous research aimed to explore OER motivations have only focused on reasons for contribution, but not linking them and/or ignoring reasons for non-contribution, and whether there are any conflict between the both. This is where the new proposed model has helped in understanding the complexity of motivation. Posing light to such complexity helps to strengthen/ work on reasons for contribution and to deal with reasons for non-contribution.

Although there have been some attempts to explore the intrinsic and extrinsic reasons for contributing in the physical world [65; 66], as well as the virtual world through contributing to open content and open source software [42; 59; 67; 68], none have to explore both intrinsic and extrinsic (approach) reasons for contribution to open educational resources (such as *Wikibooks*), as well as issues of amotivation (or avoidance) when individuals lack the intention/skills. In this article, a theoretical model integrating both approach and avoidance motivations is proposed to explain OER motivations.

Results presented in this paper, from the methodological point of view, do agree with what previous research highlighted in the regard of using factor analysis and rotation criterion to test a hypothesis. More specifically, although Schmitt & Sass [69], argued that Varimax rotation sought prefect cluster configurations that are easily interpretable, perfect cluster configurations do not reflect reality as variables/items commonly measure multiple factors that might collapse and somewhat misguided notion of achieving perfect independent clusters. This explains why Varimax rotation was successful to explore factors agrees with the theoretical model in approach motivations, but was not that successful to come up with factors that agree with avoidance motivations. Although it is not recommended that Varimax are instructed to extract a number of factors that differ from the theoretical framework, statisticians (such as Tabachnick & Fidell [46]) do not mind if rotation are conducted as many as an interpretable optimum solution is reached.

Results of data analyses revealed that both approach and avoidance motivations may co-exist, since some contributors answered both subscales while others answered either of the two subscales. These results demonstrate that approach-avoidance ranges on a continuum from pure approach to pure avoidance with in between double approach-avoidance – which imply that dealing with reasons for non-contribution enhance the level of motivation and thus contribution. Moreover, and in consistence with Covington and Müeller's [28], the results reveal that both intrinsic and extrinsic motivation may co-exist. It would appear that a dichotomy of autonomous and controlled motivation better represents human motivation, since enjoyment and integrated values (Table 8), and external regulations and introjected regulations (Table 9) were inter-related. In other words, while autonomous motivation is more intrinsic, controlled motivation is more extrinsic. The co-existence of intrinsic and extrinsic motivations suggest that while enjoyment and endorsed values are important to maintain motivation and thus contribution, encouragement and rewarding are also important to initiate and stimulate motivation for contribution. Furthermore, and as Bidee et al. [70] have found, when volunteers appear to be autonomous, they dedicate more effort to their voluntarily work (and in this research OER *produsers* will dedicate their work to their OER participation).

While intrinsic motivation reflects approach motives only, extrinsic motivation reflects the cognitive conflict between the desired and undesired issues, and the outcome of this conflict is making a decision about contribution. This result, to some extent, is consistent with regulatory styles and goal orientations as proposed by Koestner & Losier's [26] and Yperen [39]: while individuals face conflict between approach and avoidance in external and introjected regulations, they approach their goals upon excitement and if these goals meet their identified values. Such result suggest that self-learners are more likely to be excited and have their desire to learn and other endorsed values, while students likely to be "pushed" or encouraged to write and contribute to OCER until they enjoy what they are doing and/or believe in the values of their contributing activities.

Although the empirical finding regarding amotivation failed to demonstrate the theoretical model's two proposed dimensions (*Inability* and *Negative Beliefs*), the revealed six components (Table 10) can be logically situated into these proposed dimensions. More specifically, Component 1 (negative views toward contextual system), Component 3 (negative views toward volunteering), and Component 4 (distracting interests) can fall into *Negative Beliefs* including the devalue contribution since individuals prefer other interests and social activities over it, while *Inability* can include Component 2 (lack of confidence), Component 5 (negative views toward wikis), and Component 6 (irrelevant excuses) since inability to write and/or not knowing how to use wikis may cause lack of confidence which makes individuals read only, and when they are questioned they provide irrelevant excuses. Regardless, the dimensionality of amotivation is in itself consistent with the need to go beyond the one-dimension model [31; 32]. The six dimensions also spotlight that there are a need for societies and educational systems to raise the value of the importance of voluntary work. Moreover, providing support and visible instructions/help may reduce any lack of confidence especially if such help aims to educate how to write to open content learning resources, but focusing on the importance of their contribution during tutorials.

Recruitment and maintaining OER *produsers* is essential for OCER sustainability [5]. Since the psychological processes that lead to burnout are similar among paid workers and volunteers [71; 72], additional factors such intrinsic motivation should be of particular importance, in order to recruit more contributors. Users have sufficient incentives to contribute when they expect their benefits to exceed their costs. Hence, to achieve sustainable OER, designers of OER activities need to understand that users will not participate in their contents without gaining more in terms of the rewards (e.g. in understanding, enhancement, social networking, enjoyment, etc.) than the time and effort they spent even if such return benefits contributor societies.

Similar to Vansteenkiste et al.'s [27] findings, this study found that OER *produsers* value community improvement more than any return from the social recognition – and that those *produsers* value learning which is consistent with the basic psychological needs. This means that feeling of added value to the self and/or others may enhance motivation. Therefore, encouragement and building the awareness should focus on values of contribution. Furthermore, OERs should support more interactive means of communication between users to enhance chances of enjoyment, socialization, and to hinder barriers of collaboration which will promote more traffic and thus more contribution. In light with previous research (see for example Ciani et al. [73]), there is a need to design useful learning activities on the future of learners as well as that these activities should be interesting to those learners so that they adopt learning goals. Since Bidee et al. [70] did not find that controlled motivated behaviour has lessen the volunteers' work effort, this implies that encouraging participation will not likely to have negative impact on *produsers.* Having said that, the author must stresses on the need of having experimental research that assesses motivational outcomes – a call for research that previously highlighted (see for example Vallerand, Pelletier, & Koestner [74]). Future research could focus on OER motivation in formal education only.

The survey used in this study is a reliable measuring instrument of approach and avoidance motivations for contribution to open educational resources – making it usable in future research. Furthermore, results also suggest that results of factor analysis of the total scale revealed the statistical validity of its subscales. Moreover, results suggest that Varimax rotation is not always perfect to cluster interpretable factors – a finding that agrees with Schmitt & Sass [69]. Future research should also consider a longitudinal experimental study that may explore how learning activities could be designed to enhance engagement and learning outcomes and that can have positive implications for *produsers'* communities and their engagement with open content learning activities OCLA.

References

1. Amichai-Hamburger, Y. 2008, 'Potential and promise of online volunteering', *Computers in Human Behavior*, vol. 24, no. 2, pp. 544-562.
2. Cravens, J. 2000, 'Virtual volunteering: Online volunteers providing assistance to human service agencies', *Journal of Technology in Human Services*, vol. 17, no. 2-3, pp. 119-136.
3. Wikibooks 2011, *What is wikibooks*, updated 1 March 2011, Wikibooks, viewed 2 March 2011 2011, <http://en.wikibooks.org/wiki/Wikibooks:What_is_Wikibooks>.
4. Wikibooks 2011, *Welcome to wikibooks*, Home page, updated 15 December 2010, Wikibooks, viewed 15 January 2011, <http://en.wikibooks.org/wiki/Main_Page>.
5. Hanna, A. and Wood, D. 2011, 'Bridging the gap between oer initiative objectives and oer user needs in higher education', paper published in the Proceedings of ASCILITE: Changing Demands & Changing Directions, Hobart, Tasmania, 4-7 December, pp. 539-556, <http://www.ascilite.org.au/conferences/hobart11/downloads/papers/Hanna-full.pdf>.
6. Pfeil, U., Zaphiris, P. and Ang, C.S. 2006, 'Cultural differences in collaborative authoring of wikipedia ', *Journal of Computer-Mediated Communication*, vol. 12, no. 1, pp. 88-113, <http://jcmc.indiana.edu/vol12/issue1/pfeil.html >.
7. Brophy, J. 1987, 'On motivating students', in *Talks to teachers*, eds. Berliner, D.C. and Roshenshine, B.V., Random House, New York, pp. 201–245.
8. Clary, E.G. and Snyder, M. 1999, 'The motivations to volunteer: Theoretical and practical considerations', *Current Directions in Psychological Science*, vol. 8, no. 5, pp. 156-159,
9. Stukas, A.A., Snyder, M. and Clary, E.G. 1999, 'The effects of "mandatory volunteerism" on intentions to volunteer', *Psychological Science*, vol. 10, no. 1, pp. 59-64, <http://pss.sagepub.com/content/10/1/59.abstract>.
10. Borne, B., Thornton, B., Ryckman, R.M. and Gold, J.A. 2004, 'Intrinsic-extrinsic religiosity and university students' willingness to donate organs posthumously', *Journal of Applied Social Psychology*, vol. 34, no. 1, pp. 196-205,
11. Nov, O. 2007, 'What motivates wikipedians, or how to increase user-generated content contribution', *Communications of the ACM*, vol. 50, no. 11, pp. 60-64, <http://faculty.poly.edu/~onov/Nov_Wikipedia_motivations>.
12. Leroux, A. 2004, 'Idelogy: An economic point of view', in *The elgar companion to economics and philosophy*, eds. Davis, J.B. and Runde, J., Edward Elgar Publishing Ltd., Cheltenham, UK, pp. 159-178.
13. Bryant, S.L., Forte, A. and Bruckman, A. 2005, 'Becoming wikipedian: Transformation of participation in a collaborative online encyclopedia', paper presented at the International ACM SIGGROUP Conference on Supporting Group Work, Sanibel Island, Florida, USA.
14. Ou, S.S. and Hars, A. 2002, 'Working for free? Motivations for participating in open-source projects', *International Journal of Electronic Commerce*, vol. 6, no. 3, pp. 25-39,
15. Roberts, J.A., Hann, I.-H. and Slaughter, S.A. 2006, 'Understanding the motivations, participation, and performance of open source software developers: A longitudinal study of the apache projects', *Journal of Management Science*, vol. 52, no. 7, pp. 984-999, <http://papers.ssrn.com/sol3/papers.cfm?abstract_id=918518>.
16. Lakhani, K. and Wolf, R. 2005, 'Why hackers do what they do: Understanding motivation and efforts in free/open source projects', in *Perspectives on free and open source software*, eds. Feller, J., Fitzgerald, B., Hissam, S.A. and Lakhani, K.R., MIT Press, USA, pp. 1-21.
17. Lerner, J. and Tirole, J. 2005, 'Economic perspectives on open source', in *Perspectives on free and open source software*, eds. Feller, J., Fitzgerald, B., Hissam, S.A. and Lakhani, K., Massachusetts Institute of Technology, USA, pp. 47-77.
18. Liang, C.-Y., Chen, C.-H. and Hsu, Y.-L. 2008, 'The participation motivation and work styles of the administrators for chinese wikipedia', *Journal of Educational Media & Library Sciences*, vol. 46, no. 1, pp. 081-109.
19. Baytiyeh, H. and Pfaffman, J. 2010, 'Volunteers in wikipedia: Why the community matters', *Educational Technology & Society*, vol. 13, no. 2, pp. 128-140 .
20. Brunel, F.F. and Nelson, M. 2000, 'Exploring gendered responses to 'help-self' and 'help-others' charity ad appeals: The mediating role of world-views', *Journal of Advertising*, vol. 29 no. 3, pp. 15-28.
21. Sargeant, A. and Lee, S. 2002, 'Individual and contextual antecedents of donor trust in the voluntary sector', *Journal of Marketing Management*, vol. 18, no. 7/8, pp. 779 – 802.
22. Deci, E.L. and Ryan, R.M. 2008, 'Self-determination theory: A macro theory of human motivation, development, and health', *Canadian Psychology*, vol. 49, no. 3, pp. 182-185, <http://www.psych.rochester.edu/SDT/documents/2008_DeciRyan_CanPsych.pdf>.
23. Zimmerman, B.J. 2000, 'Self-efficacy: An essential motive to learn', *Journal of Contemporary Educational Psychology*, vol. 25, no. 1, pp. 82–91.

24. Ryan, R.M. and Deci, E.L. 2000, 'Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being', *American Psychologist,* vol. 55, no. 1, pp. 68-78, <http://www.psych.rochester.edu/SDT/documents/2000_RyanDeci_SDT.pdf>.
25. Elliot, A.J. 1999, 'Approach and avoidance motivation and achievement goals', *Educational Psychologist,* vol. 34, no. 3, pp. 169-189.
26. Koestner, R. and Losier, G.F. 2004, 'Distinguishing three ways of being internally motivated: A closer look at introjection, identification, and intrinsic motivation', in *Handbook of self-determination research*, eds. Deci, E.L. and Ryan, R.M., University of Rochester Press, Rochester, NY, pp. 101-121.
27. Vansteenkiste, M., Timmermans, T., Lens, W., Soenens, B. and Van den Broeck, A. 2008, 'Does extrinsic goal framing enhance extrinsic goal oriented individuals' learning and performance? An experimental test of the match-perspective vs. Self-determination theory', *Journal of Educational Psychology,* vol. 100, no. 2, pp. 387-397.
28. Covington, M.V. and Müeller, K.J. 2001, 'Intrinsic versus extrinsic motivation: An approach/avoidance reformulation', *Educational Psychology Review,* vol. 13, no. 2, pp. 157-176.
29. Deci, E.L. and Ryan, R.M. 1985, *Intrinsic motivation and self-determination in human behavior*, Plenum, New York.
30. Shen, B., Wingert, R.K., Li, W., Sun, H. and Rukavina, P.B. 2010, 'An amotivation model in physical education', *Journal of Teaching in Physical Education,* vol. 29, no. 1, pp. 72–84.
31. Legault, L., Green-Demers, I. and Pelletier, L. 2006, 'Why do high school students lack motivation in the classroom? Toward an understanding of academic amotivation and the role of social support', *Journal of Educational Psychology,* vol. 98, no. 3, pp. 567-582.
32. Frederick, S.R. 2009, 'A multigroup investigation of academic amotivation in american secondary school students: Demographic and social support predictors', School of Psychology, Walden University.
33. Jackson-kersey, R. and Spray, C. 2013, 'Amotivation in physical education: Relationships with physical self-concept and teacher ratings of attainment', *European Physical Education Review,* vol. 19, no. 3, pp. 289-301.
34. Elliot, A.J. and Covington, M.V. 2001, 'Approach and avoidance motivation', *Educational Psychology Review,* vol. 13, no. 2, pp. 73-92.
35. Thrash, T.M. and Elliot, A.J. 2002, 'Approach-avoidance motivation in personality: Approach and avoidance temperaments and goals', *Journal of Personality and Social Psychology,* vol. 82, no. 5, pp. 804-818.
36. Covington, M.V. 2000, 'Goal theory, motivation, and school achievement: An integrative review', *Annual Review of Psychology,* vol. 51, no. 3, pp. 171-200.
37. Elliot, A.J. and Harackiewicz, J.M. 1996, 'Approach and avoidance achievement goals and intrinsic motivation: A mediational analysis', *Journal of Personality and Social Psychology,* vol. 70, no. 3, pp. 461-475.
38. Elliot, A.J. and Sheldon, K.M. 1997, 'Avoidance achievement motivation: A personal goals analysis', *Journal of Personality and Social Psychology*, vol. 73, no. 1, pp. 171-185.
39. Van Yperen, N.W. 2006, 'A novel approach to assessing achievement goals in the context of the 2 x 2 framework: Identifying distinct profiles of individuals with different dominant achievement goals', *Personality and Social Psychology Bulletin,* vol. 32, no. 11, pp. 1432-1445.
40. Elliot, A.J. and McGregor, H.A. 2001, 'A 2 x 2 achievement goal framework', *Journal of Personality and Social Psychology*, vol. 80, no. 3, pp. 501-519.
41. Marylène Gagné, Jacques Forest, Marie-Hélène Gilbert, Caroline Aubé, Estelle Morin and Malorni, A. 2010, 'The motivation at work scale: Validation evidence in two languages ', *Educational and Psychological Measurement,* vol. 70, no. 4, pp. 628-646.
42. Hars, A. and Ou, S. 2001, 'Working for free? Motivations of participating in open source projects', paper published in the Proceedings of Thirty-Forth Hawaii International Conference on System Sciences, Hawaii, pp. 1-9.
43. Schweik, C.M., Evans, T.P. and Grove, J.M. 2005, 'Open source and open content: A framework for global collaboration in social-ecological research', *Journal of Ecology and Society,* vol. 10, no. 1, <http://www.ecologyandsociety.org/vol10/iss1/art33/>.
44. Bernard, H.R. 2005, *Research methods in anthropology: Qualitative and quantitative approaches*, 4 edn, Rowman Altamira.
45. Bryman, A. 2008, *Social research methods*, 3rd edn, Oxford University Press, Oxford.
46. Tabachnick, B.G. and Fidell, L.S. 2007, *Using multivariate statistics*, 5th edn, Pearson, Boston.
47. Rutkowski, L. and Svetina, D. 2014, 'Assessing the hypothesis of measurement invariance in the context of large-scale international surveys', *Educational and Psychological Measurement,* vol. 74, no. 1, pp. 31–57.
48. Taylor, J.A. 1997, 'Factorial validity of scores on the aiken attitude to mathematics scales for adult pretertiary students', *Educational and Psychological Measurement,* vol. 57, no. 1, pp. 125-130.
49. Dunn, K.E., Lo, W.-J., Mulvenon, S.W. and Sutcliffe, R. 2012, 'Revisiting the motivated strategies for learning questionnaire: A theoretical and statistical reevaluation of the metacognitive self-regulation and effort regulation subscales', *Educational and Psychological Measurement,* vol. 72, no. 2, pp. 312-331.
50. Gonzalez-Pienda, J.A., Pineiro, I., Nunez, J.C., Cabanach, R.G., Rodriguez, S. and Valle, A. 2001, 'Approach goals, avoidance goals and multiple academic goals', *PSICOTHEMA,* vol. 13, no. 4, pp. 546-550.
51. Quilty, L.C. 2006, 'Approach and avoidance temperament and goal orientation', Doctor of Philosophy thesis, University of Waterloo.
52. Skopek, S.E. 2007, 'Approach-avoidance motivation and the achievement of exercise-related goals', Dissertation thesis, The American University.
53. Clary, E.G., Snyder, M., Ridge, R.D., Copeland, J., Stukas, A.A., Haugen, J. and Miene, P. 1998, 'Understanding and assessing the motivations of volunteers: A functional approach', *Journal of Personality and Social Psychology,* vol. 74, no. 6, pp. 1516-1530.
54. Hustinx, L., Handy, F., Cnaan, R.A., Brudney, J.L., Pessi, A.B. and Yamauchi, N. 2010, 'Social and cultural origins of motivations to volunteer: A comparison of university students in six countries', *International Sociology,* vol. 25, no. 3, pp. 349-382.

55. Stebbins, R.A. and Graham, M. 2004, *Volunteering as leisure/leisure as volunteering: An international assessment*, CABI Publishing, Oxfordshire, UK.

56. Stukas, A.A., Daly, M. and Cowling, M.J. 2005, 'Volunteerism and social capital: A functional approach', *Australian Journal on Volunteering*, vol. 10, no. 2, pp. 35-44.

57. Forte, A. and Bruckman, A. 2006, *Why do people write for wikipedia? Incentives to contribute to open-content publishing*, Georgia Institute of Technology.

58. Rafaeli, S. and Ariel, Y. 2008, 'Online motivational factors: Incentives for participation and contribution in wikipedia', in *Psychological aspects of cyberspace: Theory, research, applications* ed. Barak, A., Cambridge University Press, pp. 243-267.

59. Krishnamurthy, S. 2006, 'On the intrinsic and extrinsic motivation of free/libre/open source (floss) developers', *Knowledge, Technology, and Policy*, vol. 18, no. 4, pp. 17-39, <http://dx.doi.org/10.1007/s12130-006-1002-x >.

60. Augar, N., Raitman, R. and Zhou, W. 2004, 'Teaching and learning online with wikis', paper published in the Proceedings of 21st Australasian Society for Computers in Learning in Tertiary Education (ASCILITE) Conference, Perth, December 5-8, <http://www.ascilite.org.au/conferences/perth04/procs/pdf/augar.pdf>.

61. Bold, M. 2006, 'Use of wikis in graduate course work', *Journal of Interactive Learning Research*, vol. 17, no. 1, pp. 5-14.

62. Bruns, A. and Humphreys, S. 2005, 'Wikis in teaching and assessment: The m/cyclopedia project', paper published in the Proceedings of WikiSym, San Diego, CA, U.S.A., October 16-18, <http://www.wikisym.org/ws2005/proceedings/paper-03.pdf>.

63. Désilets, A. and Paquet, S. 2005, 'Wiki as a tool for web-based collaborative story telling in primary school: A case study', paper presented at the World Conference on Educational Multimedia, Hypermedia & Telecommunications, Montréal, Québec, Canada, June 27 - July 2, <http://iit-iti.nrc-cnrc.gc.ca/iit-publications-iti/docs/NRC-48234.pdf>.

64. Sajjapanroj, S., Bonk, C., Lee, M. and Lin, G. 2006, 'The challenges and successes of wikibookian experts and want-to-bees', paper published in the Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education, Honolulu, Hawaii, USA, pp. 2329-2333, <http://www.editlib.org/?fuseaction=Reader.NoAccess&paper_id=24058>.

65. Antoni, G.D. 2009, 'Intrinsic vs. Extrinsic motivations to volunteer and social capital formation', *Kyklos: International Review for Social Sciences*, vol. 62, no. 3, pp. 359-370.

66. Finkelstein, M.A. 2009, 'Intrinsic vs. Extrinsic motivational orientations and the volunteer process', *Personality & Individual Differences*, vol. 46, no. 5/6, pp. 653-658.

67. Bitzer, J., Schrettl, W. and Schröder, P.J.H. 2007, 'Intrinsic motivation in open source software development', *Journal of Comparative Economics*, vol. 35, no. 1, pp. 160–169, <http://ideas.repec.org/p/wpa/wuwpdc/0505007.html >.

68. Yang, H.-L. and Lai, C.-Y. 2010, 'Motivations of wikipedia content contributors', *Computers in Human Behavior*, vol. 26, no. 6, pp. 1377-1383.

69. Schmitt, T.A. and Sass, D.A. 2011, 'Rotation criteria and hypothesis testing for exploratory factor analysis: Implications for factor pattern loadings and interfactor correlations', *Educational and Psychological Measurement*, vol. 71, no. 1, pp. 95-113.

70. Bidee, J., Vantilborgh, T., Pepermans, R., Huybrechts, G., Willems, J., Jegers, M. and Hofmans, J. 2013, 'Autonomous motivation stimulates volunteers work effort: A self-determination theory approach to volunteerism', *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, vol. 24, no. 1, pp. 32-47.

71. Elshaug, C. and Metzer, J.C. 2001, 'Personality attributes of volunteers and paid workers engaged in similar occupational tasks', *Journal of Social Psychology*, vol. 141, no. 6, pp. 752-763.

72. Lewig, K.A., Xanthopoulou, D., Bakker, A.B., Metzer, J.C. and Dollard, M.F. 2007, 'Burnout and connectedness among australian volunteers: A test of the job demands-resources model', *Journal of Vocational Behavior*, vol. 71, pp. 429-445.

73. Ciani, K.D., Sheldon, K.M., Hilpert, J.C. and Easter, M.A. 2011, 'Antecedents and trajectories of achievement goals: A self-determination theory perspective', *British Journal of Educational Psychology*, vol. 81, no. 2, pp. 223–243.

74. Vallerand, R.J., Pelletier, L.G. and Koestner, R. 2008, 'Reflections on self-determination theory', *Canadian Psychology*, vol. 49, no. 3, pp. 257–262.