



What can online self-reported contributions to Wikibooks tell us about self-determination and goal-valence theories?

Amal Hanna & Jacques Metzger (University Of South Australia)

Friday 24 June 2011 – 10.30am (Mezzanine M3)

Self Determination Theory (SDT) has been extensively discussed in the psychology literature; its different applications are providing evidence that the theory is still useful. Tenets of the theory are that intrinsic motivation includes enjoyment and curiosity while extrinsic motivation includes external rewards (e.g. attaining ego-enhancement) and/or avoiding aversive stimuli (e.g. avoiding guilt). An online questionnaire was designed to explore goals and motivations of contributors to an open content website. Results suggested that while extrinsically motivated individuals approached their desired goals, they also avoided undesired issues. These results suggest that Goal Valence Theory (GVT), to some extent, adds a new perspective to SDT. The discussed implications of the results focus on the theories of SDT and GVT, and toward more sustainable open online communities.

What can online self-reported contributions to Wikibooks tell us about Self-Determination and Goal-Valence Theories?

Amal Hanna & Jacques Metzger
University of South Australia

Introduction

Wikibooks is a one of Wikimedia Foundation (WMF) projects that hosts a collection of electronic open-content textbooks on a variety of different subjects (Wikibooks, 2003b). WMF uses wiki technology to run their projects. Wiki is a tool for online collaboration (Leuf & Cunningham, 2001) which enables collaborators to work on the same document regardless of their cultural background. Indeed, patterns of contribution to open content web pages like Wikipedia or open educational resources like Wikibooks may differ according to their cultural background (Hanna, 2009; Pfeil, Zaphiris, & Ang, 2006).

Wikibooks depends completely on online volunteers who work collaboratively to write non-fiction textbooks. A volunteer to this project, or '*Wikibookian*' (Wikibooks, 2003c), is anyone who can edit and is familiar with the subject (Wikibooks, 2003a). Contributors to Wikibooks can be mainly classified into those students who are motivated to use Wikibooks in class settings and those contributors who edit texts from the general public (Sajjapanroj, Bonk, Lee, & Lin, 2006). It may be that students were more externally motivated and rewarded by their teachers for contributing, while the general public had more freedom to decide to contribute and possibly were more internally motivated.

There is little, if any, research on motivation for contribution to open content textbooks. In contrast, motivation for contribution to open source software OSS, such as Linux, Mozilla and

Apache (see Feller & Fitzgerald, 2002 for more information about OSS), has not been overlooked. Intrinsic motivation, in the forms of enjoyment and altruism manifested in helping behaviour, has been argued to be the main driver for volunteer software developers in contributions towards programming (Ou & Hars, 2002), as well as extrinsic reasons for motivation, such as financial rewards and building status (Roberts, Slaughter, & Hann, 2006). Those who reported that their enjoyment in contributing was higher (Roberts, et al., 2006) did not spend more time on OSS projects than those with lower enjoyment, while Wu (2007) found that the more commercially viable an open source project is, the more likely developers would be extrinsically motivated. These findings suggest that intrinsic motivation (at least enjoyment) suits short-term goals (Koestner & Losier, 2004), whereas more extrinsic motivation suits long-term goals.

Clary et al. (1998) generated a set of self-report items reflecting psychological and social functions of volunteerism. Factors (motivations) that emerged from their analysis reflected six volunteering functions as measured by Clary's et al. (1998) Volunteer Function Inventory (VFI). These were: 1) values relating to altruistic and humanitarian concerns for others [*values*]; 2) opportunities permitting new learning experiences and knowledge and the chance to exercise those [*understanding*]; 3) opportunities permitting relationships with others and sharing their interests [*social*]; 4) career-related benefits that may be obtained from participation in volunteer work [*career*]; 5) eliminating negative aspects that surround the ego through guilt reduction and addressing personal problems [*protective*] and 6) growth, development and positive strivings of the ego [*enhancement*]. Nov (2007) has found these six motives, in addition to ideology and enjoyment, to motivate users of Wikipedia to contribute to its articles. Although Nov (2007) has

attempted to distinguish between ideology and value, it remains difficult theoretically and practically to distinguish between ideologies and values (see also Leroux, 2004).

Indeed, not all volunteers have the freedom to make a decision to volunteer (in which participation is under their own control), in particular, some volunteers who are under external pressure [in the form of a *request*] to volunteer which may be considered as mandatory volunteerism (Clary & Snyder, 1999; Stukas, Snyder, & Clary, 1999). Similarly, students, in some programs, are required to volunteer for a number of hours in order to graduate (Stukas et al., 1999). It must be noted that helping behaviour is not always a planned action or subjected to a rational decision-making process, since instant and less conscious decision-making can help to control accidentally volunteer behaviour [*sudden need*]. This explains why newcomers to Wikipedia become contributors by participating in some simple tasks such as correcting vocabulary (Bryant, Forte, & Bruckman, 2005). Pleasure, [*enjoyment*], may be an important goal that motivates Wikipedia's users to voluntarily write articles (Nov, 2007) and software developers to contribute programming to open source software (Hertel, Nieder, & Herrmann, 2003). Following the tenets of many religions, helping others is fundamental [*religion*] (Borne, Thornton, Ryckman, & Gold, 2004).

Programmers to OSS act consistently within the norms of their OSS community and this goal is strongest when private gain-seeking is minimized by programmers feeling obliged to contribute to OSS for others to use this free OSS [*obligation toward community*] (Lakhani & Wolf, 2005). Moreover, programmers to OSS can develop their ego-gratification from a desire of peer recognition [*recognition*] and through signalling their talents to different audiences (Lerner &

Tirole, 2005). Development of reputation is rewarding as individuals make efforts to share in order to achieve widespread name recognition. Although it has been questioned why many volunteers spent time and efforts without pay (Lakhani & Wolf, 2005), those volunteers would not donate their efforts without having time to do so. However, in addition to other sources of motivation, killing time itself may be a reason for volunteering [*killing time*]. For example, administrators in Wikipedia who have more personal time and have weaker social connections tend to have higher motives for being administrators (Liang, Chen, & Hsu, 2008). 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" (Baytiyeh & Pfaffman, 2010, p. 136). It may be difficult or impossible to identify all reasons that motivate people to volunteer whether in physical or virtual organisations, particularly since a major theoretical feature relies on distinguishing between intrinsic and extrinsic motivation for volunteering.

There is disagreement about the meanings of intrinsic and extrinsic motivations for volunteering behaviour. In some instances, *intrinsic* means help-self (Brunel & Nelson, 2000), on other occasions it means reasons related to individuals themselves (Sargeant & Lee, 2002), whereas *extrinsic* can mean help-others (Brunel & Nelson, 2000), or reasons related to contextual antecedents (Sargeant & Lee, 2002). Indeed, in this article we have taken the conceptualisation of intrinsic and extrinsic motivation from the cognitive psychological perspective. In particular, Deci and Ryan (2008, p. 182), from the standpoint of Self determination theory (SDT), argued that motivation can be autonomous or controlled both of which direct and energise behaviour. Autonomous motivation consists of intrinsic motivation (enjoyment) and 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 both 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. Deci and Ryan's (2008) model of motivation can be presented in the following Table 1.

Table 1: Factors of motivation and amotivation according to Deci and Ryan (2008)

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

While intrinsic motivation applies to short-term goals as it energises emotions such as excitement, identification works more with long-term goals as it provides commitment and fosters positive emotions such as pride in accomplishment (Elliot, 1999). An adapted version of the conceptual characteristic of the introjected, identified, and intrinsic regulatory style (Koestner & Losier, 2004, p. 105) is presented in Table 2.

Table 2: Regulatory styles and goal orientation adapted from Koestner & Losier (2004, p. 105)

	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)

Sheldon (2004) defined self-concordance goals (that lead to self-integrated actions) as goals that inspire a person's interest (intrinsic goals) and deeply-felt core values (identified goals), while non-integrated actions involve external goals and introjected goals. Extrinsic goals such as money, popularity and beauty (Kasser & Sheldon, 2002; Sheldon, 2004) are considered to be opposed to intrinsic goals such as intimacy, community and self-knowledge (Sheldon, 2004; Sheldon, Ryan, Deci, & Kasser, 2004).

Carver (1996) pointed out that although identified regulation occurs intra-psychically, individuals perceive identified regulation as personally important. Thus, Carver (1996) identified regulation, for practical reasons, to be equivalent to intrinsic motivation in its sequences. Moreover, Koestner and Losier (2004) conceptualized intrinsic motivation and internalisation as working in a '*complementary fashion*' in which intrinsic motivation focuses on excitement of short term goals while internalisation focuses on endorsed values that ensure commitment in the long run.

While considerable attention has been given to the study of intrinsic motivation and extrinsic motivation in the literature, the study of amotivation is a neglected area of research, particularly in terms of exploring the complexity of motivational deficit beyond the one-dimensional model (Legault, Green-Demers & Pelletier 2006; Frederick 2009). Ryan and Deci (2000) 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 is said to arise due to: 1) inability due to lack of contingency; 2) lack of perceived competence; and 3) negative belief towards the value of an activity or its outcomes (Ryan, 1995). These three reasons can be theoretically classified

into two groups: a) inability which consists of lack of capabilities and skills to perform tasks, and b) negative beliefs (values) that make 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.

The approach-avoidance distinction is viewed by Elliot and Covington (2001) as fundamental to the study of human behaviour. On the one hand, approach goals are easier to assess, while eliciting positive cognitions by leading people to focus on their desirable outcomes. On the other hand, avoidance goals are difficult to monitor and elicit negative cognitions by leading people to focus on undesirable outcomes. Both process and outcomes can influence the feeling of well-being (Tamir & Diener, 2008).

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 (Elliot, 1999). In every situation that a human faces, there is a conflict between varieties of responses which cannot all be made at the same time (Miller, 1944). If the strength of avoidance is increased, with little approach elicited, there will be almost no conflict and thus they accept failure (Covington & Müeller, 2001). 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 (Elliot & Harackiewicz, 1996). The contemporary view of avoidance achievement motivation includes both motivation to avoid failure (or negative outcomes) and motivation to avoid a fearful (undesired) situation (Elliot & Sheldon, 1997).

Conflict between approach and avoidance ranges on a continuum, from pure approach-approach at one extreme, through double approach-avoidance in the middle, to pure avoidance-avoidance at the other extreme point of this continuum (Miller, 1944). The distinction between approach and avoidance is not only theoretical (Covington & Müeller, 2001), since findings from experiments (Elliot & Church, 1997; Fenz & Epstein, 1962; Miller, 1944) provide empirical support for such distinction.

Behaviour is derived by excitement or endorsed (integrated) value, and can be considered to be ‘approach behaviour’. Intrinsically motivated individuals seek enjoyment, and integrated values of success and affiliation. Extrinsically motivated individuals behave toward goals to attain rewards (approach) or to avoid punishment (avoidance). These rewards and/or punishment are called external regulation (Koestner & Losier, 2004). Even if individuals attain the feeling of worth and ego-enhancement (approach) or avoid feelings of guilt or shame (avoidance), they are extrinsically motivated by introjected regulation (Deci & Ryan, 1985, 2000; Kasser, 2004; Rosecrance, 1981; Ryan & Deci, 2000).

The hypothesised existence of opposing tendencies to approach versus avoidance may provide an important mechanism for prioritizing an action. Elliot and Thrash (2002) found that approach and avoidance temperaments are systematically linked to achievement goals (Sokolowski, Schmalt, Langens, & Puca, 2000). Furthermore, Koestner & Losier (2004) 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).

Although there is wide agreement over the approach-avoidance distinction, in itself it is not sufficient to understand and explain behaviour in volunteers' motivation in open educational resources.

Covington and Müeller (2001) did not agree with Deci and Ryan's (1985) 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. Covington and Müeller (2001) 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 much research in the area of achievement motivation has focused on academic goals (especially those associated with intrinsic curiosity or learning such as exploring, experiencing and discovering), less research has focused on social goals. Such social goals include making friends, respect and being liked, cooperation and sharing, developing understanding and helping peers in understanding.

These multiple-goal alliances organise behaviour via self-regulation mechanisms, where individuals struggle to establish and maintain a sense of worth and belonging in a society (Covington, 2000). However, Yperen (2006) made a link between approach-avoidance and indicators of wellbeing as illustrated in the following Table 3.

Table 3: Valence dependent variables adapted from Yperen (2006)

Positively-valenced dependent variables (approach)	Negatively-valenced dependent variables (avoidance)
Approach scales of achievement goals	Avoidance scales of achievement goals
Positive affectivity	Negative affectivity
Self-oriented perfectionism	Socially-prescribed perfectionism
Outcomes variables of intrinsic motivation (pleasure, accomplishment, and experience stimulation).	Outcome variables of extrinsic motivation (external regulation, introjected regulation, and identified regulation) and amotivation

There are some shifts in Self-Determination Theory from 1) intrinsic versus extrinsic motivation (STD), to 2) autonomous versus controlled regulation, to 3) autonomy-supportive versus controlling social environment, to 4) intrinsic versus extrinsic personal goal, and finally to 5) intrinsic versus extrinsic goal framing (short-term/long-term) (Vansteenkiste, Lens, & Deci, 2006).

Intrinsic and extrinsic goals in contributing and non-contributing to Wikibooks are of particular interest in the current research. Therefore, our study aims to contribute to recent progressions in the SDT specifically relating to intrinsic and extrinsic personal goals. In particular, this study aims to uncover personal goals in volunteering to contribute, and not volunteering to contribute, to open educational resources.

The stimulation of motivation might happen internally for the purpose of enjoyment or curiosity (learning) or externally either for social obligation and/or to attain benefits or avoid problems.

Research aiming to integrate multi-dimensional motivation, such as Covington and Müeller (2001), Elliot and McGregor (2001), and Ryan & Deci (2000) has focused on understanding different motives and their outcomes, the dimensional framework can be extended beyond the 3

x 2 framework as argued by Elliot and McGregor (2001). There are a number of reasons for accepting the extended dimensional framework:

- 1) The distinction between intrinsic and extrinsic motivation is not realistic because both intrinsic and extrinsic motivation might co-exist (Covington & Müeller, 2001).
- 2) Both the dimensions of intrinsic motivation and amotivation as proposed by Ryan & Deci (2000) are not enough to explain much motivation/amotivation (see for example Green-Demers & Pelletier (2006) and Koestner and Losier (2004) and Carver (1996)).
- 3) The three regulatory styles of SDT, introjection, identification, and intrinsic, towards goals can be either through avoidance, the conflict between approach and avoidance, or approach respectively (Koestner & Losier, 2004), while Yperen (2006) included amotivation, and external regulation, as negatively-valued goals that can be presented in avoidance scales.

To conclude and for reasons mentioned above, a new model combining Self-Determination Theory (SDT) and Goal-Valence Theory (GVT) is illustrated in the following Table 4.

Table 4: 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

One aim of this study is to determine how well this model can explain motivation both to contribute and not to contribute to open educational resources, specifically Wikibooks. Specifically, this research aims to answer the following research questions:

- Can both intrinsic and extrinsic volunteering motivations to contribute to OER co-exist?
- Will intrinsic motivation be determined by both enjoyment and integrated values?

- Will extrinsic motivation be determined by both ego-enhancement/guilt-reduction and external regulation (by rewards and punishment)?
- Can amotivation be multi-dimensional? If yes, what are the factors that contribute to amotivation?.

Method

Instrument

Web-based surveys have been used in much research in the field of open source software and open content (see for example Bitzer, Schrettl, & Schröder, 2005; Hars & Ou, 2001; Hertel, Niedner, & Herrmann, 2003b; Lakhani & Wolf, 2005; Nov, 2007; Schweik, Evans, & Grove, 2005). The web-based survey is an ideal tool for potential participants who are geographically distributed around the globe. A restricted-access web-based survey was designed in two languages, English and Arabic, to suit two different cultural backgrounds (Bernard, 2005; Brislin, Lonner, & Thorndike, 1973; Bryman, 2008; Neuman, 2003).

Invitation emails, including a username and password, were sent to subscribers of *Wikibooks'* email list. To deal with an expected low rate of response, a website advertisement, including a username and password, was published on the English and Arabic main pages of *Wikibooks*. Statements were designed to measure approach and avoidance motivations and in the form of 5 point *Likert*-type scale items with response categories from strongly agree (+2) to strongly disagree (-2). See all the statements in appendix 1. The web-based survey included statements divided into two subscales:

- 1) Subscale A included statements that measured the thirteen reasons mentioned in the introduction for contributing to Wikibooks (see appendix 1).
- 2) Subscale B included statements measuring reasons that may hinder users, or reduce their efforts, from contributing to Wikibooks. These statements included reasons that can be theoretically related to both inability or negative beliefs (see appendix 2).

Data analysis

Two analysis methods used were factor analysis followed by Varimax rotation (Tabachnick & Fidell, 2007). These two methods have been extensively used together (Baytiyeh & Pfaffman, 2010; Green & Harvey, 1983; Taylor, 1997).

Results

A considerable number of responses to the survey, (N= 262 after excluding incomplete responses) was received. Incomplete responses were considered to be those questionnaires in which more than four items of each subscale were left unanswered. Respondents to the survey were classified into two groups: 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. These two groups were analysed as one sample.

Internal consistency of scales

The internal consistency (Pallant, 2005) for the total scale, Cronbach's Alpha, is 0.76; while Alpha coefficients were 0.74 for subscale A, and 0.84 for subscale B, indicating good internal consistency. Factor analysis was conducted, using SPSS software for statistical analyses, 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. The result of Varimax rotation 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 appendix 1).

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. The theoretical framework discussed earlier suggests that there are two different groups within motivational reasons for contribution (approach): these two groups were labelled as 'intrinsic reasons' and 'extrinsic reasons'. Hence, two components were extracted in the Varimax rotation, the result of which 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 appendix 2).

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 Appendix 3).

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 Appendix 4).

Reasons for non-contribution (Avoidance)

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. Thus, Varimax rotation analysis was conducted a few times using different numbers of extracted components. The optimum solution (interpretive components with no deleted items) was reached with 6 extracted components (see appendix 5). Another confirmatory analysis, Equamax rotation, was conducted with an instruction of six components to be extracted. The result revealed that items of each component were very similar using both rotation methods.

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.

Discussion

The distinction between approach and avoidance has deep theoretical roots (Miller, 1944) and also in the achievement motivation literature (Gonzalez-Pienda, et al., 2001; Quilty, 2006; Skopek, 2007; Thrash & Elliot, 2002), especially in the field of education and student motivation. Contemporary goal theorists have only recently begun to explore the nature of avoidance, as well as approach, in the forms of achievement regulation (e.g. Elliot & Sheldon, 1997). Volunteers, too, have their goals that they want to achieve. These goals determined from volunteers' self-reports, can be represented as conscious reasons for volunteering their time and efforts. Reasons for volunteering (in physical organisations) have been discussed at length (Clary & Snyder, 1999; Clary, et al., 1998; Hustinx et al., 2010; Stebbins & Graham, 2004; Stukas, Daly, & Cowling, 2005). Reasons for volunteering (contributing) into open content web pages (Baytiyeh & Pfaffman, 2010; Forte & Bruckman, 2006; Nov, 2007; Rafaeli & Ariel, 2008), open source software (Bitzer, et al., 2005; Hars & Ou, 2001; Hertel, et al., 2003b; Krishnamurthy, 2006; Lakhani & Wolf, 2005) and open educational resources (Augar, Raitman, & Zhou, 2004; Bold, 2006; Bruns & Humphreys, 2005; Désilets & Paquet, 2005; Duffy & Bruns, 2006; Sajjapanroj, et al., 2006) have also been considered.

Although there have been some attempts to explore the intrinsic and extrinsic reasons for contributing in the physical world (Antoni, 2009; Finkelstein, 2009) as well as the virtual world through contributing to open content and open source software (Hars & Ou, 2001; Krishnamurthy, 2006; Lakhani & Wolf, 2005; Yang & Lai, 2010), none have distinguished between intrinsic and extrinsic motivation based on known psychological foundations as proposed by Deci & Ryan (2000, 2008). Moreover, no previous studies have aimed to explore

both intrinsic and extrinsic (approach) reasons for contribution to open educational resources as well as issues of amotivation (or avoidance) when individuals lack the intention/skills, specifically in the context of contribution to Wikibooks. In the current study of reasons for contribution (approach) and reasons for non-contribution (avoidance) to Wikibooks, a theoretical model integrating both intrinsic and extrinsic motivation and approach/avoidance motivation is proposed to explain the data.

Results of data analyses revealed that both approach and avoidance motivation may co-exist since some contributors answered both subscales while others answered either of the two subscales. These results are consistent with Miller's (1944) contention that approach-avoidance ranges on a continuum from pure approach to pure avoidance with in between double approach-avoidance. Moreover, consistent with Covington and Müeller's (2001), our results also 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 than controlled motivation alone, since enjoyment and integrated values were inter-related (appendix 3), as were external regulations and introjected regulations (appendix 4). This result suggests, to some extent, that autonomous motivation is more intrinsic while controlled motivation is more extrinsic. While intrinsic motivation reflected approach motives only, extrinsic motivation reflected the cognitive conflict between the desired and undesired issues: the outcome of this conflict is the making of a decision of contribution reflecting the desired over the undesired. This result, to some extent, is consistent with regulatory styles and goal orientations as proposed by Koestner & Losier's (2004) and Yperen (2006): while individuals face conflict between approach and avoidance in external and introjected regulations, they approach their goals upon excitement and identified values.

Although the empirical finding regarding amotivation failed to demonstrate the theoretical model's two proposed dimensions (inability and negative beliefs), the revealed six components (appendix 5) can be logically situated into these proposed dimensions. Both distracting interests and lack of confidence can be considered as inability due to social responsibilities and/or lack of knowledge, while negative views toward contextual systems, negative views toward volunteering, negative views toward wikis and irrelevant excuses can be classified as negative beliefs whether relating to the task itself (volunteering) or the process (contributing). However, this dimensionality of amotivation is consistent with the need to go beyond the one-dimension model (Legault, Green-Demers & Pelletier 2006; Frederick 2009).

Users have sufficient incentives to contribute when they expect their benefits to exceed their costs (von Hippel, 2005). Practically, and to achieve sustainable open educational resources, designers of OER initiatives need to understand that users will not participate in their contents without those users gaining more in terms of the rewards (e.g. in *understanding, enhancement, social networking, enjoyment*, etc.) than the effort expended. Recruitment and maintaining volunteers is essential for sustainability. Since the psychological processes that lead to burnout are similar among paid workers and volunteers (Metzer & Elshaug, 2001; Lewig, et al., 2007) additional factors such intrinsic motivation should be of particular importance, in order to recruit more contributors. Thus, OERs should support more interactive means of communication between users, incorporate some interactive learning games as well as make the wiki tools more easy-to-use, and allow low-cost access to information. Some statements such as 'write what you know', 'enhance your understanding by writing' and/or 'wiki is like word processing' may deal with the lack of confidence. The need for marketing and building awareness through word of

mouth and greater product (or service) knowledge (Krishnamurthy, 2005) can promote more traffic and thus more contribution.

The current study shows the development of a highly reliable measuring instrument for Wikibook (non)contribution motivation, with only few items disappearing after analysis making it usable in future research.

Finally, further empirical research may be needed to explore in longitudinal studies the application of the above recommendations. More research is also needed to explore factors affecting intrinsic and extrinsic motivation for integrating OER in formal educational settings.

Reference list

- Abdi, H. (2003). Factor rotations. In M. Lewis-Beck, A. Bryman & T. Futing (Eds.), *Encyclopedia for research methods for the social sciences* (pp. 978-982). Thousand Oaks, CA: Sage.
- Antoni, G. D. (2009). Intrinsic vs. extrinsic motivations to volunteer and social capital formation. *Kyklos*, 62(3), 359-370.
- Augar, N., Raitman, R., & Zhou, W. (2004, December 5-8). *Teaching and learning online with wikis*. Paper presented at the 21st Australasian Society for Computers in Learning in Tertiary Education (ASCILITE) Conference, Perth.
- Baytiyeh, H., & Pfaffman, J. (2010). Volunteers in Wikipedia: Why the community matters. *Educational Technology & Society*, 13(2), 128-140
- Bernard, H. R. (2005). *Research Methods in Anthropology: Qualitative and quantitative approaches* (4th ed.): Rowman Altamira.
- Bitzer, J., Schrettl, W., & Schröder, P. J. H. (2005). Intrinsic motivation in open source software development: EconWPA.
- Bold, M. (2006). Use of Wikis in graduate course work. *Journal of Interactive Learning Research*, 17(1), 5-14.
- Borne, B., Thornton, B., Ryckman, R. M., & Gold, J. A. (2004). Intrinsic-extrinsic religiosity and university students' willingness to donate organs posthumously. *Journal of Applied Social Psychology*, 34(1), 196-205.
- Brislin, R. W., Lonner, W. J., & Thorndike, R. M. (1973). *Cross-cultural research methods*. New York: J. Wiley.
- Brunel, F. F., & Nelson, M. (2000). Exploring gendered responses to 'help-self' and 'help-others' charity ad appeals: The mediating role of world-views. *Journal of Advertising*, 29(3), 15 - 28.
- Bruns, A., & Humphreys, S. (2005, October 16-18). *Wikis in teaching and assessment: The M/Cyclopedia Project*. Paper presented at the WikiSym, San Diego, CA, U.S.A.
- Bryant, S. L., Forte, A., & 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.
- Bryman, A. (2008). *Social research methods* (3rd ed.). Oxford: Oxford University Press.
- Carver, C. S. (1996). Some ways in which goals differ and some implications of those differences. In P. M. Gollwitzer & J. A. Bargh (Eds.), *The psychology of action: linking cognition and motivation to behaviour* (pp. 654-671). New York: Guilford Press.
- Clary, E. G., & Snyder, M. (1999). The motivations to volunteer: Theoretical and practical considerations. *Current Directions in Psychological Science*, 8(5), 156-159.
- Clary, E. G., Snyder, M., Ridge, R. D., Copeland, J., Stukas, A. A., Haugen, J., & Miene, P. (1998). Understanding and assessing the motivations of volunteers: A functional approach. *Journal of Personality and Social Psychology*, 74(6), 1516-1530.
- Covington, M., & Müeller, K. (2001). Intrinsic versus extrinsic motivation: An approach/avoidance reformulation. *Educational Psychology Review*, 13(2), 157-176.
- Covington, M. (2000). Goal theory, motivation, and school achievement: An integrative review. *Annual Review of Psychology*, 51(3), 171-200.
- Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behaviour*. New York: Plenum.
- Deci, E. L., & Ryan, R. M. (2000). The "What" and "Why" of goal pursuits: Human needs and the self-determination of behaviour. *Psychological Inquiry*, 11(4), 227-268.
- Deci, E. L., & Ryan, R. M. (2008). Self-Determination Theory: A Macrotheory of Human Motivation, Development, and Health. *Canadian Psychology*, 49(3), 182-185.
- Désilets, A., & 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. <http://iit-iti.nrc-cnrc.gc.ca/iit-publications-iti/docs/NRC-48234.pdf>

- Duffy, P., & Bruns, A. (2006, September 26). *The use of blogs, wikis and RSS in education: A conversation of possibilities*. Paper presented at the Online Learning and Teaching Conference, Brisbane.
- Elliot, A. J. (1999). Approach and avoidance motivation and achievement goals. *Educational Psychologist*, 34(3), 169-189.
- Elliot, A. J., & Church, M. A. (1997). A hierarchical model of approach and avoidance achievement motivation. *Journal of Personality and Social Psychology*, 72(1), 218-232.
- Elliot, A. J., & Covington, M. (2001). Approach and avoidance motivation. *Educational Psychology Review*, 13(2), 73-92.
- Elliot, A. J., & Harackiewicz, J. M. (1996). Approach and avoidance achievement goals and intrinsic motivation: A mediational analysis. *Journal of Personality and Social Psychology*, 70(3), 461-475.
- Elliot, A. J., & McGregor, H. A. (2001). A 2 X 2 achievement goal framework. *Journal of Personality and Social Psychology*, 80(3), 501-519.
- Elliot, A. J., & Sheldon, K. M. (1997). Avoidance achievement motivation: A personal goals analysis. *Journal of Personality and Social Psychology*, 73(1), 171-185.
- Elliot, A. J., & Thrash, T. (2002). Approach-avoidance motivation in personality: Approach and avoidance temperaments and goals. *Journal of Personality and Social Psychology*, 82(5), 804-818.
- Feller, J., & Fitzgerald, B. (2002). A history of open source software. In J. Feller & B. Fitzgerald (Eds.), *Understanding Open Source Software development* (pp. 27-40). London: Pearson Education Ltd.
- Fenz, W. D., & Epstein, S. (1962). Theory and experiment on the measurement of approach-avoidance conflict. *The Journal of Abnormal and Social Psychology*, 64(2), 97-112.
- Finkelstein, M. A. (2009). Intrinsic vs. extrinsic motivational orientations and the volunteer process. *Personality & Individual Differences*, 46(5/6), 653-658.
- Forte, A., & Bruckman, A. (2006). *Why do people write for Wikipedia? Incentives to contribute to open-content publishing*. Georgia Institute of Technology, College of Computing.
- Gonzalez-Pienda, J. A., Pineiro, I., Nunez, J. C., Cabanach, R. G., Rodriguez, S., & Valle, A. (2001). Approach goals, avoidance goals and multiple academic goals. *PSICOTHEMA*, 13(4), 546-550.
- Green, K., & Harvey, D. (1983). Cross-cultural validation of the Attitudes toward Mainstreaming Scale. *Educational and Psychological Measurement*, 43(4), 1255-1261.
- Hanna, A. (2009, 30 May – 1 June). *Cross cultural motivational patterns of contributors to open content projects*. Paper presented at the Second Global Studies Conference, Dubai.
- Hars, A., & Ou, S. (2001). *Working for free? Motivations of participating in open source projects*. Paper presented at the Thirty-Forth Hawaii International Conference on System Sciences, Hawaii.
- Hertel, G., Niedner, S., & Herrmann, S. (2003). Motivation of software developers in Open Source projects: an Internet-based survey of contributors to the Linux kernel. *Research Policy*, 32(7), 1159-1177.
- Hustinx, L., Handy, F., Cnaan, R. A., Brudney, J. L., Pessi, A. B., & Yamauchi, N. (2010). Social and cultural origins of motivations to volunteer. *International Sociology*, 25(3), 349-382.
- Kasser, T. (2004). Sketches for a self-determination theory of values. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 101-121). Rochester, New York: University of Rochester Press.
- Koestner, R., & Losier, G. F. (2004). Distinguishing three ways of being internally motivated: A closer look at introjection, identification, and intrinsic motivation. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 101-121). Rochester, NY: University of Rochester Press.
- Krishnamurthy, S. (2005). An analysis of open source business models. In J. Feller, B. Fitzgerald, S. A. Hissam & K. Lakhani (Eds.), *Perspectives on free and open source software* (pp. 279-296). London, England: MIT Press.
- Krishnamurthy, S. (2006). On the intrinsic and extrinsic motivation of free/libre/open source (FLOSS) developers. *Knowledge, Technology, and Policy*, 18(4), 17-39.
- Lakhani, K., & Wolf, R. (2005). Why hackers do what they do: Understanding motivation and efforts in free/open source projects. In J. Feller, B. Fitzgerald, S. A. Hissam & K. Lakhani (Eds.), *Perspectives on free and open source software* (pp. 3-22). USA: Massachusetts Institute of Technology (MIT) Press.
- Legault, L., Green-Demers, I., & 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*, 98(3), 567-582.
- Lerner, J., & Tirole, J. (2005). Economic perspectives on open source. In J. Feller, B. Fitzgerald, S. A. Hissam & K. Lakhani (Eds.), *Perspectives on free and open source software* (pp. 47-77). USA: Massachusetts Institute of Technology.
- Leroux, A. (2004). Ideology: An economic point of view. In J. B. Davis & J. Runde (Eds.), *The Elgar companion to economics and philosophy* (pp. 159-178). Cheltenham, UK: Edward Elgar Publishing Ltd.
- Leuf, B., & Cunningham, W. (2001). *The Wiki way: Quick collaboration on the web*. Boston, MA, USA: Addison-Wesley Longman Publishing Co.
- Lewig, K.A., Xanthopoulou, D., Bakker, A.B., Metzger, J.C., & Dollard, M.F. (2007). Burnout and connectedness among Australian volunteers: A test of the Job Demands-Resources Model. *Journal of Vocational Behavior*, 71, 429-445.
- Liang, C.-Y., Chen, C.-H., & Hsu, Y.-L. (2008). The participation motivation and work styles of the administrators for Chinese Wikipedia. *Journal of Educational Media & Library Sciences*, 46(1), 081-109.
- Metzger, J., & Elshaug, C. (2001). Personality attributes of volunteers and paid workers engaged in similar occupational tasks. *Journal of Social Psychology*, 141(6), 752-763
- Miller, N. E. (1944). Experimental studies of conflict. In J. M. Hunt (Ed.), *Personality and the behaviour disorders* (pp. 431-465). New York: Ronald Press.
- Neuman, W. L. (2003). *Social research methods: Qualitative and quantitative approaches* (5th ed.). Boston ; London: Allyn and Bacon.
- Nov, O. (2007). What motivates Wikipedians? *Communications of the ACM*, 50(11), 60-64.
- Ou, S. S., & Hars, A. (2002). Working for free? Motivations for participating in open-source projects. *International Journal of Electronic Commerce*, 6(3), 25-39.
- Pallant, J. (2005). *SPSS survival manual: A step-by-step guide to data analysis using SPSS for Windows (Version 12)* (2nd ed.). Berkshire: Open University Press.
- Pfeil, U., Zaphiris, P., & Ang, C. S. (2006). Cultural differences in collaborative authoring of Wikipedia *Journal of Computer-Mediated Communication*, 12(1).
- Quilty, L. C. (2006). *Approach and avoidance temperament and goal orientation*. Dissertation Doctor of Philosophy, University of Waterloo, Canada.
- Rafaeli, S., & Ariel, Y. (2008). Online motivational factors: Incentives for participation and contribution in Wikipedia. In A. Barak (Ed.), *Psychological aspects of cyberspace: Theory, research, applications* (pp. 243-267): Cambridge University Press.
- Roberts, J. A., Slaughter, S. A., & Hann, I.-H. (2006). Understanding the motivations, participation, and performance of open source software developers: A longitudinal study of the Apache projects. *Management Science*, 52(7), 984-999.
- Rosecrance, R. (1981). Reward, Punishment, and Interdependence. *The Journal of Conflict Resolution*, 25(1), 31-46.
- Ryan, R. M. (1995). Psychological needs and the facilitation of integrative processes. *Journal of Personality*, 63(3), 397-427.
- Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, 25(1), 54-67.
- Sajjapanroj, S., Bonk, C., Lee, M., & Lin, G. (2006). *The challenges and successes of Wikibookian experts and want-to-bees*. Paper presented at the World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education, Honolulu, Hawaii, USA.
- Sargeant, A., & Lee, S. (2002). Individual and contextual antecedents of donor trust in the voluntary sector. *Journal of Marketing Management*, 18(7/8), 779 - 802.
- Schweik, C. M., Evans, T. P., & Grove, J. M. (2005). Open source and open content: A framework for global collaboration in social-ecological research. *Journal of Ecology and Society*, 10(1). Retrieved from <http://www.ecologyandsociety.org/vol10/iss1/art33/>
- Sheldon, K. M. (2004). The self-concordance model of healthy goal striving: When personal goals correctly represent the person. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 37-

- 86). Rochester, NY: University of Rochester Press.
- Sheldon, K. M., Ryan, R. M., Deci, E. L., & Kasser, T. (2004). The independent effects of goal contents and motives on well-being: It's both what you pursue and why you pursue it. *Personality and Social Psychology Bulletin*, 30(4), 475-486.
- Skopek, S. E. (2007). *Approach-avoidance motivation and the achievement of exercise-related goals*. Doctor of Philosophy Dissertation, The American University, M.A., USA.
- Sokolowski, K., Schmalt, H.-D., Langens, T., & Puca, R. (2000). Assessing achievement, affiliation, and power motives all at once: The Multi-Motive Grid (MMG). *Journal of Personality Assessment*, 74(1), 126-145.
- Stebbins, R. A., & Graham, M. (2004). *Volunteering as leisure/leisure as volunteering: an international assessment*. Oxfordshire, UK: CABI Publishing.
- Stukas, A. A., Daly, M., & Cowling, M. J. (2005). Volunteerism and social capital: A functional approach. *Australian Journal on Volunteering*, 10(2), 35-44.
- Stukas, A. A., Snyder, M., & Clary, E. G. (1999). The effects of "Mandatory Volunteerism" on intentions to volunteer. *Psychological Science*, 10(1), 59-64.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston: Pearson.
- Tamir, M., & Diener, E. (2008). Approach-avoidance goals and well-being: one size does not fit all. In A. J. Elliot (Ed.), *Handbook of approach and avoidance motivation* (pp. 415-428). New York: Psychology Press: Taylor & Francis Group.
- Taylor, J. A. (1997). Factorial validity of scores on the Aiken Attitude to Mathematics Scales for adult pretertiary students. *Educational and Psychological Measurement*, 57(1), 125-130.
- Thrash, T. M., & Elliot, A. J. (2002). Approach-avoidance motivation in personality: Approach and avoidance temperaments and goals. *Journal of Personality and Social Psychology*, 82(5), 804-818.
- 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*, 32(11), 1432-1445.
- Vansteenkiste, M., Lens, W., & Deci, E. (2006). Intrinsic versus extrinsic goal contents in self-determination theory: Another look at the quality of academic motivation. *Educational Psychologist*, 41(1), 19-31.
- von Hippel, E. (2005). Open source software projects as "User Innovation Networks". In J. Feller, B. Fitzgerald, S. A. Hissam & K. Lakhani (Eds.), *Perspectives on free and open source software* (pp. 267-278). London, England: MIT Press.
- Wikibooks. (2003a, 16 December 2010). Help:Contributing Retrieved 15 January, 2011, from <http://en.wikibooks.org/wiki/Help:Contributing>
- Wikibooks. (2003b, 15 December 2010). Welcome to Wikibooks Retrieved 15 January, 2011, from http://en.wikibooks.org/wiki/Main_Page
- Wikibooks. (2003c, 15 December 2010). Wikibooks:What is Wikibooks Retrieved 15 January, 2011, from http://en.wikibooks.org/wiki/Wikibooks:What_is_Wikibooks
- Wu, C.-G. (2007). *An empirical analysis of open source software developers' motivation using expectancy-valence theory*. Doctor of Philosophy Dissertation, University of Colorado, Denver, Colorado, USA.
- Yang, H.-L., & Lai, C.-Y. (2010). Motivations of Wikipedia content contributors. *Computers in Human Behaviour*, 26(6), 1377-1383.

Appendices

Appendix 1

Varimax rotated components matrix

Scale items	Component	
	1 Avoidance	2 Approach
Scale A		
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
<i>Logical and grammatical errors have to be corrected</i>	-.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		
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 can not) 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).

Appendix 2

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

Appendix 3

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

Appendix 4

Rotated components matrix for extrinsic reasons for contribution

	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

Appendix 5

Rotated Components matrix for Reasons of non-contribution scale

	Component					
	1	2	3	4	5	6
Our society does not value voluntary work	.851	.056	.127	.019	-	.184
Our educational system (institution) does not (or cannot) adopt this technology as a part of learning process	.694	.200	.060	-	.041	.146
I do not feel confident	.165	.743	.219	.065	-	.029
I prefer reading to writing	.016	.741	-	.157	.016	.195
I don't have a knowledge base in any suitable topic	.044	.669	.160	-	.009	-
There is no clear structure for textbooks	.393	.440	.125	.120	.228	.089
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	-
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	-	-
Contribution is useless unless others know of this website	.421	-.025	.130	.588	.373	.200
I can't use wiki	.073	.165	-	.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	-	-	.797
Others do not have an internet access or do not know of this website	.244	.082	.276	.013	.083	.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