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Cross-Cultural Motivational Patterns of Contributors to Open Content Projects

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Abstract:

Human behaviour is said to be determined by human motivation (Deci & Flaste 1996) and is regulated by the self in relation to others (Markus & Kitayama 1991). Extending McClelland's (1985) theory of need for achievement, Hofstede (2001) identifies five sets of cultural values: individualism/collectivism, masculinity/femininity, high/low power distance, high/low uncertainty avoidance and long/short term orientation. He suggests that the intensity and direction of these values differ from one national culture to another. There are some researchers such as Nov (2007) and Hertel (2003) seek understanding the motivation for contribution to motivations of people who contribute to open content projects such as Wikipedia (and Wikibooks) and open software projects such as Linux (and Apache). They found that some contributors to open content/software projects are stimulated and motivated by self interests such as enjoyment, while others are motivated by altruistic interests such as providing people with access to free software or free information. Pfeil (2006), based on Hofstede's theory, argued that the patterns of contribution to Wikipedia differ between contributors from different cultures. This paper presents significant results of web-based survey which show the patterns of motivation of contributors to one of open content projects.

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Cross-Cultural Motivational Patterns of Contributors to Open Content Projects

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Motivation is the determinant of thoughts and actions that affect the choice of whether to initiate, continue, or stop certain behaviour (Weiner 1992). Although the process of motivation may be the same for all human beings, what motivates individuals is culturally based (Hodgetts, Luthans & Doh 2006). Maslow (1970) argued that needs drive individuals to behave to satisfy their needs sequentially. However, Maslow (1970) claimed that the needs of self-actualization (the high level needs in the hierarchy of needs) are responsible to motivate creative people such as artists and scientists despite their failure in satisfying their other lower needs.

Although Maslow (1970) has constructed his theory of the hierarchy of needs, the needs sometimes can be satisfied in disorder way. For example, Neher (1991) criticized the contradiction in Maslow's theory that some individuals may not sequentially satisfy their needs. Furthermore, although Maslow (1970) focused on the needs that motivate individuals toward certain behaviours, Thorndike (1935) and Hull (1951) believed that rewards or the pleasure which follows certain behaviour are effective determinants that affect behaviour. Although Hull (1951) argued that rewards lead individuals to learn, Tolman (1967) argued that reinforcement, the independent variables such as stimuli and training, may increase performance outcomes but not increase learning.

According to McClelland (1967) financial rewards are not important for people who seek achievement, rather feedback is important to them to increase the outcomes. Moreover, values that people believe in control their choices and affect the individual commitment toward specific behaviour (Feather 1995). That leads to the distinction between whether the motivation is intrinsic or extrinsic. Intrinsic motivation involves internal outcomes such as the satisfaction or the pleasure which is derived from performing certain activities (Staw 1989) or due to the interest of individuals in an activity itself (Amabile & Hennessey 1992). Other life goals that involve intrinsic aspirations are affiliation and personal development (Deci & Ryan 2008). In other words, intrinsic motivation involves self-rewards (Ryan & Deci 2000).

The extrinsic motivation refers to doing something because of its leads to separable outcomes. These extrinsic motivation is argued to vary in its relative autonomy and thus reflects either external control or the true self-regulation (Ryan & Deci 2000). Extrinsically motivated behaviours do not involve inherit interest, the main reason that motivates individuals to do those behaviour are because of the other (family, group and/or society) who value those activities (Deci & Ryan 2000). Although Deci and Ryan (1985) have argued that rewards have negative impact on the intrinsic motivation, Roland and Tirole (2003) have empirically found that rewards (extrinsic motivation) are weak reinforcers in the short term and negative reinforcers in the long term.

This paper does not aim to elaborate the interaction between intrinsic and extrinsic motivation, but it focuses on the distinction of motivation itself on the behaviour of individuals for the cultural point of view.

Hofstede (2001) has studied cultural values in different nations, and he distinguished cultures into Western and non-Western cultures. Hofstede (2001) linked the intrinsic/extrinsic goals to individualist culture while individuals from collectivist culture are mainly focus on the ego/social goals. Hofstede in his theory depended on Herzberg *et al.* (1959) definitions. The intrinsic motivators are related to the work itself, such as the freedom and challenge while the extrinsic motivators which are the other conditions which are related to the job such as the administration, company policy, and supervision. Although Deci & Ryan (1985) were focusing on the freedom of choice as a determinant for the intrinsic motivation, Markus & Kitayama (1991) argued that the provision of choice may not equally applicable in Eastern (Japan) and Western (America) cultures, and thus the intrinsic motivation may not universally applicable.

Hofstede found that in individualist countries, employees are working in their organizations because of their self-interest in jobs themselves, while in collectivist countries, the employees usually work for the social pressures and their behaviour should be consistent with the in-group interest. The area of interest as a motivator is addressed in individualism/collectivism while the sensitivity to supervision is mainly addressed in high/low power distance.

In other words, and according to Deci and Ryan (2004), in their Self-Determination Theory SDT, the self-determination is a significant variable and is mediated between the individual's satisfaction and their behaviour. Moreover, they considered that when regulations apply, motivation becomes non-self determined. In that sense, the interest-based motivation or competence-based motivation leads individuals to be intrinsically behaved.

However, motivation in organizational setting can be seen a within the domain of power. Supervisors usually try to influence their teams to work more effectively toward collective goals (Lawler 1973). In that sense, motivation here is a social process which may not involve individual preferences. Collective goals and supervision or any other forms of external influences can be considered as extrinsic motivators (Deci & Ryan 2004). However, the term of 'empowerment' was found in the field of management with the aim to affect human behaviour from extrinsically-motivated to be self-directed (Wellins, Byham & Wilson 1991). Therefore, it can be concluded that motivation can be seen as goals in which individuals aim to reach or it can be seen as social process where individuals adapt their behaviour in accordance to others. Moreover, in situations of making choices (or decisions), motivation involves cognitive processes that are based on their desires.

Although behaviour can be seen as intrinsically motivated behaviour or extrinsically motivated behaviour, the motivation can be seen at different levels. Vallerand and Ratelle (2004) claimed that motivation can be appeared at three levels: global, contextual, and situational. Another classification was introduced by Hofstede (2001) in a triangle of three levels of motivation: universal, social, and individual.

Hofstede (2001) was meant by the social level of motivation. Hofstede identified initially four, and later five, values of culture. These values are power distance, individualism, masculinity, uncertainty avoidance, and later on long-term orientation. Hofstede (2001) linked job motivations to those values. In a quantitative assessment of job motivations, he built up his theory of national culture. Individuals within the same country share work values at specific level of motivation. Therefore, each country is ranked on a continuum from high

individualism to high collectivism, and so on with other values, and scores of each value across nations of study were represented in Hofstede's index of national culture.

Hofstede (2001) assessed different intrinsic/extrinsic values against ego-social values of different national cultures. He assessed the value of freedom, the value of free time, the value of challenge, the value of training, the value of security, the value of recognition and the value of advancement. Hofstede (2001) found that in individualist cultures people value free time, the value of freedom, and the value of pleasure while in collectivist cultures individuals value training and prestige and have consideration for people. These values can be re-categorized into intrinsic oriented or extrinsic oriented in respect to the reward system and whether they are intrinsic or extrinsic will be discussed later.

Researchers in the field of open software (which its source code is open for programmers to edit and reuse such as Linux) and open content (contents that are available online to its users to edit and republish such as Wikipedia) seek understanding of why those contributors to *open* projects do so for free as voluntarily contributions. Examples of those reasons of contribution vary. Nov (2007) found that some individuals who contribute online in Wikipedia wanted to avoid negative feelings of loneliness. Hertel *et al.* (2003) and Schroer & Hertel (2007) found that some programmers in open software communities contribute programming because they want use their free time constructively.

Other reasons such as personal needs of software can also motivate programmers (Hars & Ou 2001; Lakhani & Wolf 2005) while others believe in the importance of the freedom (Ghosh *et al.* 2002; Lakhani & Wolf 2005). Other intrinsic reasons for contribution are the interest and enjoyment that the contributors feel during their contribution (Hertel, Niedner & Herrmann 2003; Nov 2007). On the other hand some reasons of contribution are extrinsically oriented such as helping others and enhancing the reputation of the community (Lakhani & Wolf 2005; Wagner & Prasarnphanich 2007).

Contribution to open software is not totally without financial return. Some programmers in open software could make money through selling some service (Hars & Ou 2001; Ghosh *et al.* 2002; Hertel, Niedner & Herrmann 2003). External rewards such as better job opportunities (Ghosh *et al.* 2002) and developing new contacts that could be useful for future career could also be found as reasons for online volunteerism. As individuals volunteer in physical organizations to learn and gain new skills (Clary *et al.* 1998), online contributors do voluntary work for the same purposes (Ye & Kishida 2003; Lakhani & Wolf 2005).

Most of the previous mentioned researchers approached contributors from Western culture. Those researchers used questionnaires in one language and they did not address where those contributors are from and whether the reasons of contribution may vary across their nations.

However, Pfeil *et al.* (2006) explored that the patterns of contribution (add link, add information, fix link, delete link and so on) differ across culture. Pfeil *et al.* (2006) employed Hofstede's theory of national culture. Pfeil *et al.* (2006) recorded and analysed the previous online activities in Wikipedia by tracking the IP addresses and their associated activities in French, German, Japanese and Dutch pages of Wikipedia. One of Pfeil *et al.* (2006) findings was that there is significant negative correlations between numbers of activities of add and clarify information and individualism score: the higher individualism score the less add and/or clarify information. This result indicates that motivation of contributors impacted by their cultures and affected on their activity preferences.

Therefore, the purpose of this paper is to find an acceptable answer for the undiscovered problem. This problem could be formed in a research question: Whether reasons for contribution behaviour differ across cultures?

To answer the research question, the researcher has to adopt a specific definition of culture, the study case, and the appropriate reasons of motivation which will be assessed.

Culture, in general, refers to a way of life of a group of people. These people share and have cumulative knowledge, experience, beliefs, values, meanings, attitudes, hierarchies, notions of time, roles, spatial relations, and also concepts of the universe and material objects. This system of cumulative knowledge is transmitted from generation to generation. Therefore, culture, according to Hofstede (2001), can be defined as a collective programming of the mind that distinguishes the members of one group or category of people from another.

The dimension, or the concept, of individualism versus collectivism has been received enough attention by researchers such as Tapanes *et al* (2009) and Tumlin *et al.* (2007) who were concerned with the behaviour of individuals online. However, the use of 'individualism' as a concept differs in these two mentioned studies. While Tapanes *et al* (2009) used individualism/collectivism as a dimension to distinguished between online learners/instructors from individualist culture (such as USA, Canada, Germany) and collectivist culture (such as China, India, and Mexico), Tumlin *et al.* (2007) used those concepts to distinguish between selfishness and sharing knowledge.

The author of this paper not only employs individualism/collectivism dimension but also she will use the Hofstede's index of national culture to not only distinguish between motivation of individuals from individualist and collectivist cultures but also to explore quantitative correlation between motivations and individualism score for each country.

The purpose of focusing only on one dimension (individualism versus collectivism) is because those open content/ open software communities are established and sustained based on the value of collaboration and collectivism (Lanier 2006) in which Pfeil *et al.* (2006) found that the higher the individualism the less activities of adding and clarifying information.

Although the quantification measures of culture has been extensively criticized (McSweeney 2002; Baskerville 2003), it does not disprove the fact that some national cultures are more individualistic than the others.

The reason to employ Hofstede's theory is that it has a static view of culture (which is not totally valid because culture is dynamic) where the dependant variables of the current study are the different reasons of motivation. Another reason to use Hofstede's theory is the quantification measure of different national cultures which enable the author to produce the correlation between individualism score and motivations.

According to Hofstede (2001), in individualist cultures, the goals are determined by the desire of individuals and it is expected that everyone looks after their selves and their immediate family. Moreover, there are loose ties between individuals in individualist cultures. On the other side of the dimension, the collectivist nations, individuals are strongly integrated into inter-relationships with others and they also seek support from their communities. The goals of individuals in collectivist cultures are set up in respect to other people in their communities.

Wikibooks website as a study case

Wiki is a tool for online collaboration (Leuf & Cunningham 2001). Although wikis are used in education as learning and teaching tools (Augar, Raitman & Zhou 2004; Bruns & Humphreys 2005; Parker & Chao 2007) teachers are also advised to engage these efficient tools to support group activities (Parker & Chao 2007). Moreover, these tools help in enhancing the social interaction of students (Augar, Raitman & Zhou 2004).

Moreover, wiki-based learning does not only support collaboration between students, but also discussions and interactions that take place on wiki discussion pages about the content of wiki help those students toward deep learning (Aharony 2009). Although students may reluctant to edit other student's work, they reported that they academic writing skills were improved (Wheeler & Wheeler 2009). On the other side, non-native English teachers who were observed during online content-based course about language and culture of English speakers were mainly focused on grammar corrections over the content revisions (Kessler 2009).

Wikibooks (Wikibooks), established in July 10, 2003, is a member of Wikimedia Foundation family. One of its well-known projects is Wikipedia, the online open and free encyclopedia. *Wikibooks* project aims to create a free library of textbooks which can be produced by anyone who can edit (Wikibooks).

As understanding of motivation of contributors to Wikipedia received enough attention by researchers such as Forte & Bruckman (2006), Nov (2007) and Rafaeli & Ariel (2008), also in a very recent research Sajjapanroj *et al.* (2008) seek understanding of different aspirations (perhaps could be called motivations) that are inherent in *Wikibooks'* contributors and motivate them to write in its textbooks.

Sajjapanroj *et al.* (2008) in their logical thought they distinguished between those aspirations of class setting contributors and of contributors from general community. The difference between those two groups of aspirations are not significant in the current paper, however what is important in the current paper what those aspirations are. Sajjapanroj *et al.* (2008) used online survey which aimed to assess different aspirations. Aspirations of contributors from the general community are ranking as follow (from highest to lowest): making learning contributions, learning new ideas from others, publishing work, experiencing new technology, self-exploration and personality learning, networking with others and external requirement such as job requirement or assignment. However, Sajjapanroj *et al.* (2008) research does not assess or reflect the values of culture on aspirations.

Moreover, although Sajjapanroj *et al.* (2008) intended to survey contributors around the world, few responses (80 out of 1500 invitation emails) were received and analysed. Most of those responses came from native English speakers and Sajjapanroj *et al.* (2008) considered the reasons were in the invitation emails and in the survey which both were in English.

Research method

The author of this paper focuses on assessing the differences of motivations for Western English speakers and Middle East Arabic speakers. Since the language of each culture carries the meanings and values of their culture (Kim 2003), the author of this paper designed a web-based questionnaire in two languages Arabic and English. Another reason for bilingual online questionnaire is that theorists in the field of psychology and sociology advise researchers to use bi/multilingual research methods if they aim to survey individuals from different cultural backgrounds (Brislin, Lonner & Thorndike 1973; Neuman 2003; Bernard 2005; Bryman 2008).

Invitation emails were sent to subscribers to *Wikibooks* email list. These invitation emails include a link to the web-based questionnaire. Generally, the response rate of web-based survey is higher than email survey (Solomon 2002; Yun & Trumbo 2007). The author of this paper herself developed, using ASP a server scripting language, and published web-based questionnaire which was hosted on University of South Australia server. A password protected survey form aimed to limit the access of un-potential participants and the username and password were sent to subscribers to *Wikibooks* email list in the invitation emails.

The low response rate is a common problem in survey research (Lin 1976). However, to increase the response rate, invitation emails were also sent to subscribers to Wikimedia Foundation email list. Moreover, Arabic and English web advertisements on *Wikibooks*' English and Arabic pages were also published including the username and password.

What and how to measure?

The different motivations of contribution to *Wikibooks* are designed to reflect the cultural values and to be assessed using *Likert* scale of 5 points from strongly agree to strongly disagree (Neuman 2004). Reasons for contribution are enjoyment, the impact of friends, the impact of teacher, aim to help poor people, publishing, the aim of use free time, the aim to solve the problem of lack of resources, and finally the learning aims.

The previous reasons can be classified according to two criteria: whether they are intrinsic or extrinsic and also whether they reflect individualist values or collectivist values. The intrinsic reasons include enjoyment, publishing work, use the free time and learning aims while the extrinsic reasons are the impact of friends or teacher, the willing to help poor people and solving the problem of lack of resources. The intrinsic reasons mainly reflect the values of individualist cultures where individuals look after themselves while the extrinsic reasons reflect the respect of social community and the inter-relations with others in collectivist communities.

The online questionnaire involved questions about native language of the participants, their country, and demographic information of their age, gender, and educational level. It also questioned about the ICT literacy that may impact the interactivity with *Wikibooks*.

Results

The author developed two levels of exclusion criteria. The first level aimed to exclude empty responses, responses that do not show the country and/or the native language of a participant. The author has 333 responses out of 371 total responses after the application of the first exclusion criterion.

The second exclusion criterion aimed to exclude non-native English or Arabic speakers, non-significant number of responses from each country (5 responses or less) and finally countries that do not have individualism score in Hofstede's (2001) index for national culture.

However, responses from India are kept on illustrations and were analysed for comprehension purposes. After the second exclusion criterion, the author has 250 responses. The following table and the opposite graph illustrate the frequencies and percentages of the 250 responses

Table (1): Frequencies table for responses sorted by country

Country	Frequency	Percentage
United States of America	110	44
Egypt	35	14
United Kingdom	22	8.8
Australia	18	7.2
Canada	17	6.8
India	17	6.8
Iraq	14	5.6
Algeria	11	4.4
Saudi Arabia	6	2.4
Total	250	100

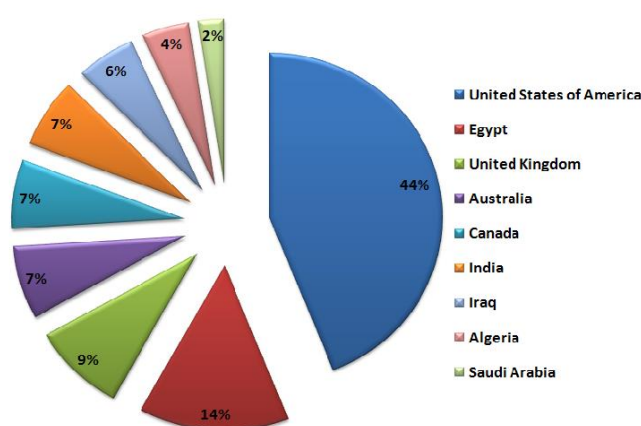


Figure (1): Percentage of responses from each country

The following graphs represent the means of the different motivation reasons (which had been answered on *Likert* scale) from participants from the countries of the study and also the individualism score for each country according to Hofstede's index of national culture.

Using SPSS for statistical analysis, the researcher could identify the correlations, and their significances, between each of contribution reason and the individualism score of each country using Pearson correlation coefficient.

1) Enjoyment as a reason for motivation and individualism score

As it appears in the following figure, there is a negative relationship between enjoyment as a reason for motivation and the individualism score. The lower individualism score, the higher individuals are contributing to *Wikibooks* website because they enjoy what they are doing.

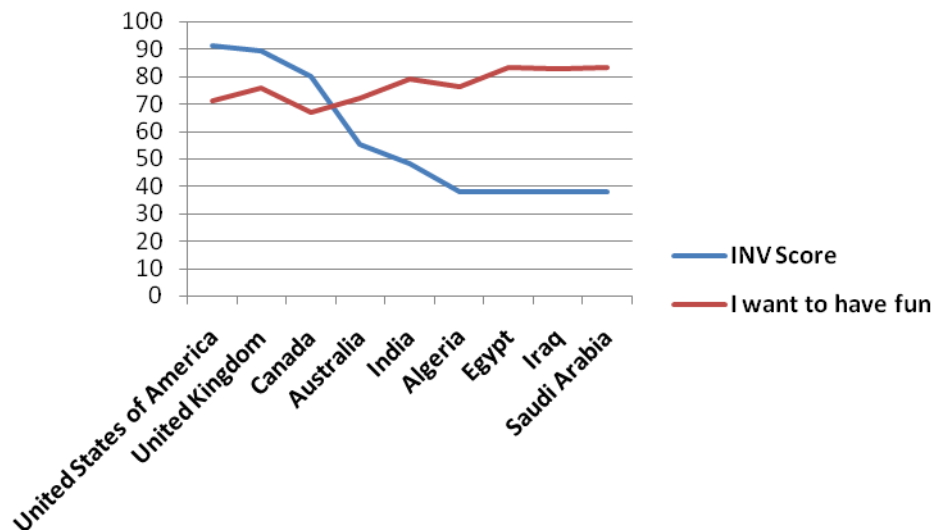


Figure (2): The correlation between individualism score and the mean of enjoyment reason

The analysis shows that there is a significant correlation between motivational reason of enjoyment and individualism and this correlation is significant at the 0.01 level and 0.05 level (2-tailed).

2) The impact of friends as a reason for motivation and individualism score

There is a negative relationship between individualism and the impact of friends on individuals to write to *Wikibooks*. The higher individualism, the lower impact of friends on their peers. The correlation individualism and the impact of friends and individualism is significant only at 0.01 level.

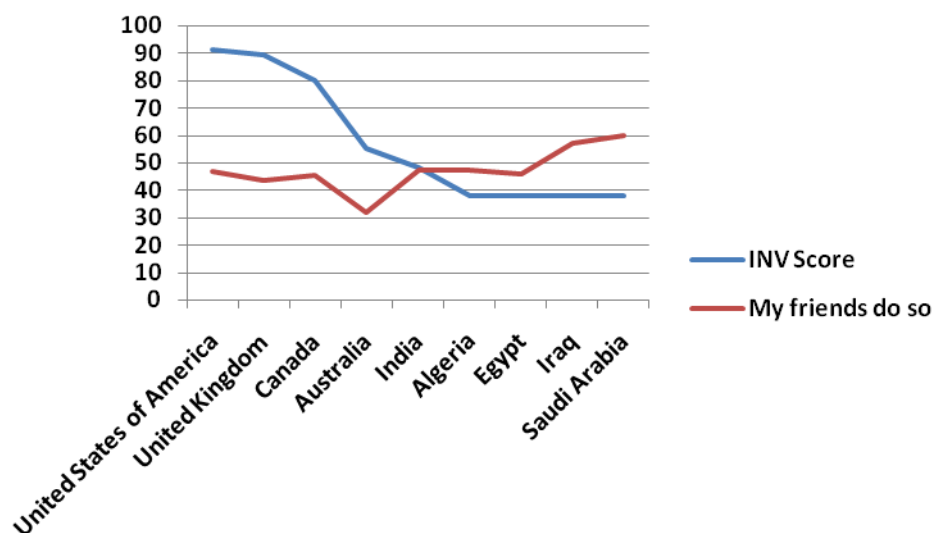


Figure (3): The correlation between individualism score and the mean of the impact of friends

3) Helping poor people as a reason for contribution and individualism

There is a negative relationship between the value of helping poor people and individualism. The higher individualism, the lower individuals care about helping poor people. This correlation is significant at the 0.01 level and 0.05 level. The following figure shows this relationship

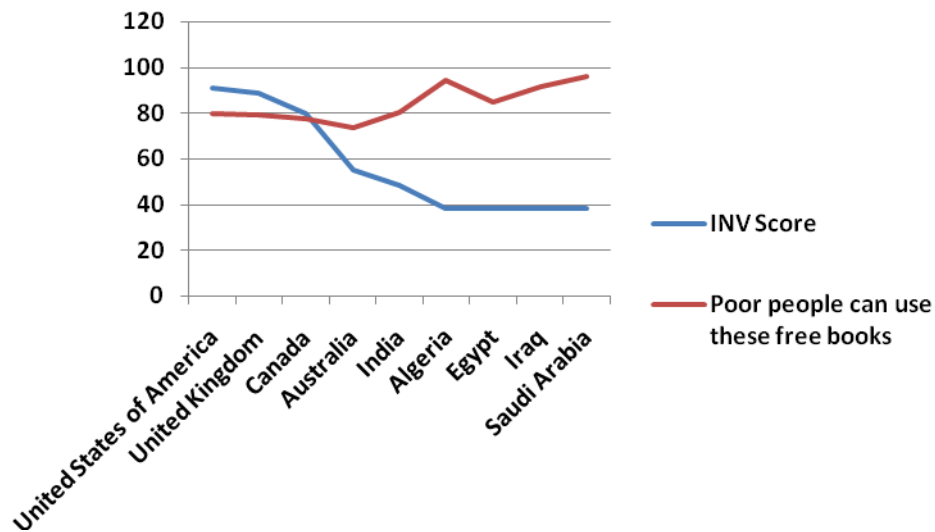


Figure (4): The correlation between individualism score and the mean of the value of helping poor people

4) Publishing the individual's work as a reason of motivation and individualism

The analysis of the means of participants' answers about whether they aim to publish their work shows that there is a negative relationship between the aim of publishing at *Wikibooks* and individualism. The higher the individual seek to publish their work the lower individualism score. This correlation is significant at the 0.01 level (see Figure 5).

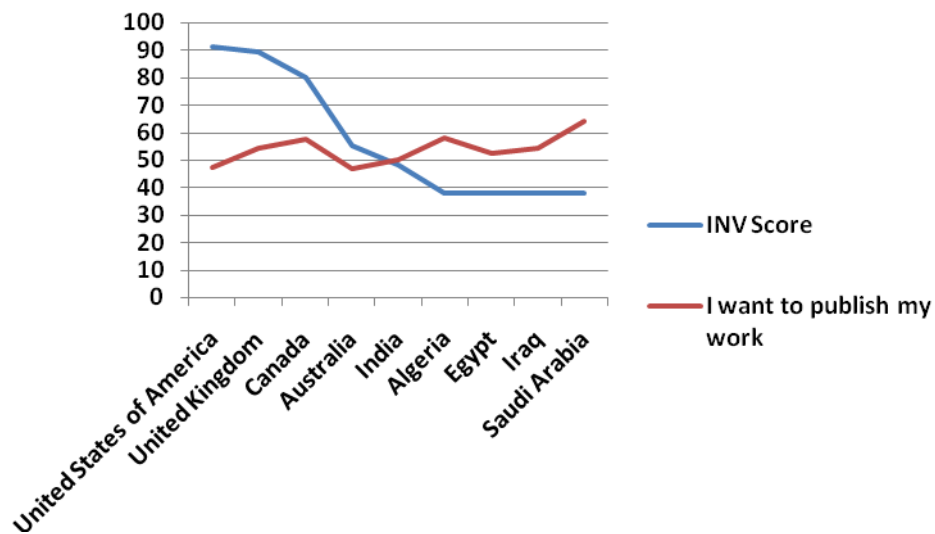


Figure (5): The correlation between individualism score and the mean of publishing aim

5) The use of free time as a reason for motivation and individualism

The analysed answers from participants show that there is a negative correlation between the goal of using the free time and the score of individualism. The higher individualism score, the lower individuals contribute because they want to use their free time. This correlation is significant at 0.01 level. The following figure shows the correlations.

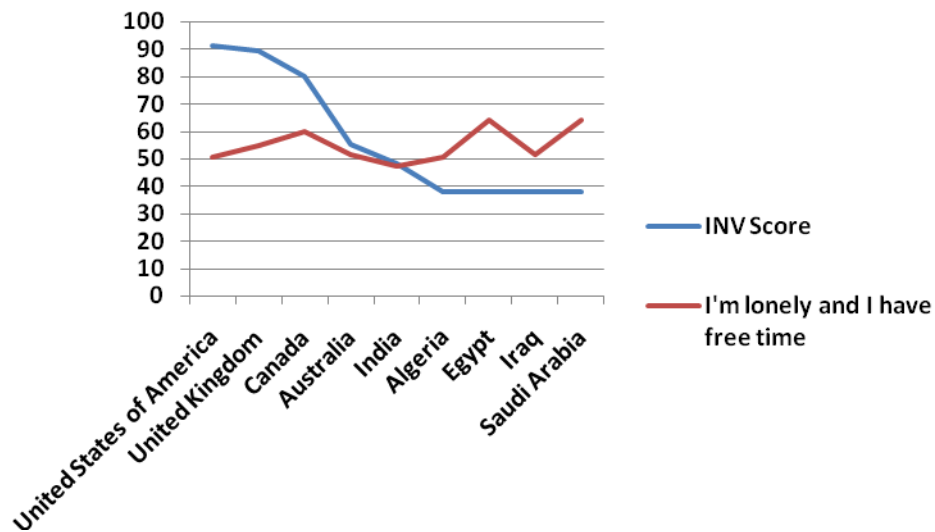


Figure (6): The correlation between individualism score and the mean of the aim of using free time

6) The aim of creating educational resources as a reason for motivation and individualism

There is negative correlation between the aim of helping in create resources and individualism. In other words, aiming to create educational resources is higher in countries of low individualism score. This correlation is significant at the 0.01 level. The following figure shows this correlation.

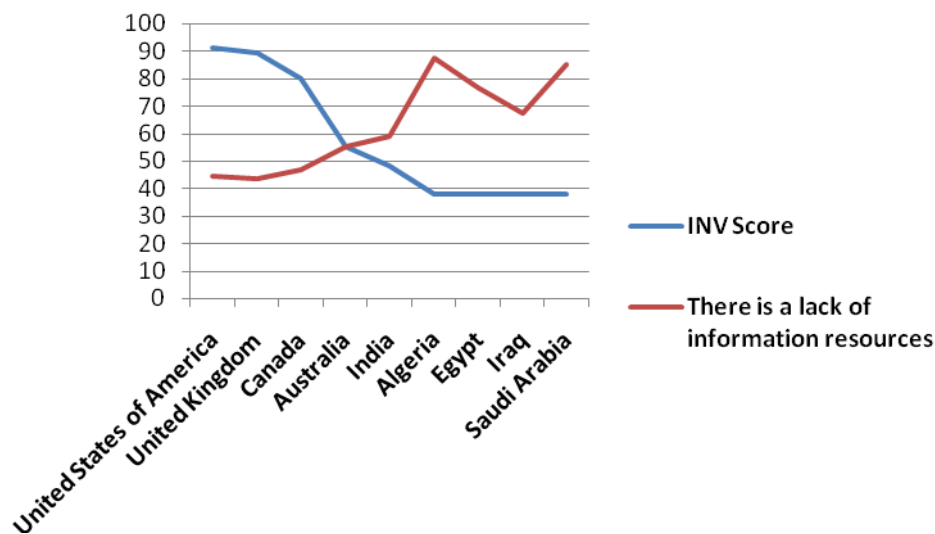


Figure (7): The correlation between individualism score and the mean of aim of solving the problem of resources lack

Discussion and future research

The previous reasons for motivation can be classified into two categories. First category includes intrinsic motivations such as enjoyment, publishing work, and the use of free time. The second category includes the extrinsic motivations which are the impact of friends, helping poor people, and creating educational resources. These two categories can also reflect goals of individuals in individualist and collectivist cultures. In individualist culture, it is expected that people look after themselves, and this is why reasons of contribution should include enjoyment, publishing work, and to use the free time. On the other side, in collectivist culture, individuals set up their goals in respect to other people in their communities and therefore reasons for contribution may include the impact of friends, helping poor people, and also creating educational resources for other.

The results show that correlations between each reason of motivation are significantly negative with individualism. These results are consistent with what Pfeil *et al.* (2006) discovered: add and clarify information is significantly and negatively correlated with individualism score.

Additional Analysis

The author has done further analysis to explore the difference of extrinsic and extrinsic motivation in Western Anglo culture which include Australia, United States of America, United Kingdom, and England and Middle East Arabic culture that include Algeria, Egypt, Iraq and Saudi Arabia.

The author used the previous classification of intrinsic and extrinsic motivations. The author summed up the means of the three reasons of the two types of motivation against the two cultures. Then she calculated the percentage intrinsic means and extrinsic means against Western Anglo and Middle East Arabic cultures as it appears in the following table.

Table (2): Percentage of the means of intrinsic and extrinsic reasons of motivation in Anglo and Arabic cultures

Culture	IND (Average)	% of intrinsic means	% of extrinsic means
Anglo Culture	79	47.42	42.72
Arabic Culture	38	52.58	57.28

To make the previous table clearer, the following provides more understanding of the individualism and the intrinsic/extrinsic reasons of motivation.

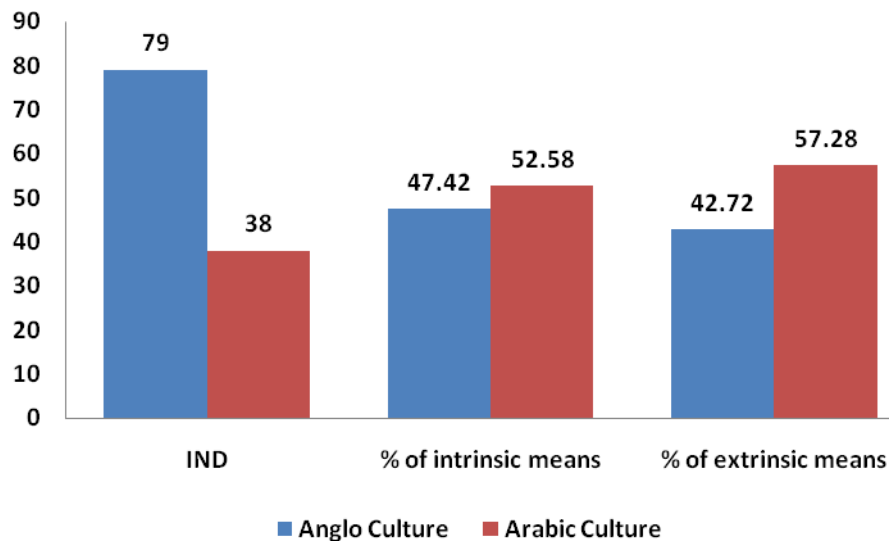


Figure (8): Percentage of means of intrinsic/extrinsic reasons of motivations in Arabic and Anglo Cultures

Although all reasons of motivation are negatively correlated with individualism, as it appears in the previous analysis, this additional analysis shows that intrinsic reasons are more significant than extrinsic reasons for individuals from individualist Anglo culture while extrinsic reasons of motivations are more significant for individuals from collectivist Arabic culture.

Because of Sajjapanroj's (2008) came from Western countries, the aspirations of individuals who contributed to *Wikibooks* are mainly intrinsic such as they want to learn or they want to publish their work. Similarly, this study shows that intrinsic reasons of motivations are significantly higher in individualist culture.

Although the author expected to find intrinsic reasons of motivation, in general, would be significantly higher than the extrinsic reasons, the quantitative data analysis shows the opposite (the sum of intrinsic reasons of motivation is 1491 while the sum of extrinsic reasons of motivation is 1557). The reason for that expectation is that contribution as voluntary work is inherent from volunteer. Although those volunteers may do their work because they want to learn new experience, build their networks, or even help to solve a problem in their communities (Clary *et al.* 1998), they would not continue their voluntary work if they feel it may negatively affect them or their work did not meet their expectations (Unstead-Joss 2008).

To conclude, understanding the different reasons of motivation is significant to find appropriate incentives for individuals around the world. Since the extrinsic motivation is more significant than the intrinsic motivation, as this paper shows, therefore and as according to Deci & Ryan (2004), finding appropriate incentives is important to internalize the extrinsic regulations, for the sustainability of those open content projects, contribution to the knowledge pool, and for the benefits of contributors themselves such as developing skills of life-long learning and writing skills.

Finally, the author would like to mention to the limitation of this research: although the research focused on different national cultures, the language barrier limits the current research. Researchers can undertake further research to assess the impact of other cultures on contributors from their cultures.

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