## Intrinsic motivations for productive ageing

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## **ABSTRACT**

The involvement of the elderly in the activities is low compare to younger adult due to their frailty. This paper presents intrinsic motivations for productive ageing where it highlights the factors that motivate the elderly to participate in the activities. There are thirteen elderly respondents came from the people in the urban Klang Valley. The qualitative data analysis approach is used in this study. There are five intrinsic factors, which, consist of Autonomy, Competence, Relatedness, Curiosity and Altruism that motivate the participation of the elderly in volunteering, caregiving and self-development activities in this study. This research focuses on activities that resulted intrinsic values and not on monetary value like most of past researchers. Intrinsic motivation features are significant features in ICT as the identification of the ICT features is based on motivation to use the ICT.

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## 1. INTRODUCTION

By the year 2050, the global population aged 60 and above will expand by more than three times. It is estimated that the number of the elderly can reach almost 2 billion [1]. This population has problems in achieving extrinsic value or monetary value as they experience constraints in contributing towards society such as going to work every day because of their poor health condition [2]-[4]. However, the elderly are able to be productive in terms of intrinsic value such as they are rich in knowledge and wisdom [5]. Recent research has also agreed on the values of the elderly, as highlighting the productive ageing concept to students in a university curriculum resulted in good perceptions of the elderly [6].

Productive aging involves the participation of older people that present value to the society and themselves in the activities [7]. The values can be achieved or presented in two types, which are intrinsic and extrinsic [8]. Based on prior literature review, there are three dimensions (activities) of productive ageing which including Market Activities, Caregiving and Volunteering [7], [9], [10]-[21]. However, self-development is agreed by some prior researchers [19], [21] as one of productive ageing dimension. Regardless of elderly physical constraint, ICT can attract the elderly in social activities [22]. Past researchers discussed on how to reduce elderly loneliness, increase the participation of the elderly in the activities even though of their frailty [24] by recommended to use ICT in managing themselves [23].

Intrinsic values are important to the elderly, as they may improve quality of life [25] and elderly are seeking intrinsic value in their life [21]. Thus, this research focuses on activities that resulted intrinsic values and not on monetary value like most of past researchers. Intrinsic values emerge from the activities motivated by intrinsic motivation. Intrinsic motivations are among the contribution factors to promote participation in people activities [26], [27]. Intrinsic motivation refers to the reason for every activity performed for intrinsic value [28]. Thus, the appropriate intrinsic motivations that drive the elderly to perform the activities for productive ageing will be investigated in this study.

Previous researchers highlighted a few theories, models and attitudes as intrinsic motivation towards people's well being [29], [30]. Past researchers have identified many theories of intrinsic motivation that have been applied into design of information, communication and technology [26], [27], [31], [32]. The existing theories of intrinsic motivation are Self Determination Theory, Flow Theory, Theory of Intrinsically Motivational Instruction, Organizational Citizenship Behavior and many more [29], [33]-[35].

Self-determination theory is a macro human theory and motivation that is associated with human psychological needs that enable humans to engage in their activities [33]. This theory focuses on human intrinsic motivation where decision-making and activities by humans is done without being influenced by external factors. There are three human psychological needs, which must be acquired by all humans in order to maintain psychological health and well-beings, which consist of autonomy, competence and relatedness [36]. Organization Citizenship Behaviour (OCB) refers to the positive employees' attitudes that give benefits to the organization and themselves. The popular dimensions of OCB include Altruism, Courtesy, Conscientiousness, Civic Virtue and Sportsmanship [34]. Prior researchers highlighted the role of OCB as intrinsic motivation in their research as antecedent of knowledge sharing, which involves human to human interaction [37].

Malone [35] studied the *Theory of Intrinsically Motivational Instruction* in computer games to motivate computer learning games. He suggested a framework for the Theory of Intrinsically Motivational Instruction, which consists of three factors: Challenge, Fantasy and Curiosity in computer learning games. This research focuses on the factors that motivate the elderly to participate in the activities. From the identified intrinsic motivation components, technology features are identified for supportive features for Elderly's technology. The results of this study will identify the elderly activities that should be given attention by other researchers and IT developers. The identified intrinsic motivation features will be considered as ICT applications features that meet the requirement to attract the elderly to participate in the activities.

## 2. RESEARCH METHOD

Data are collected within a period from June 2014 until January 2015. Semi-structured interviews are conducted to get deeper understanding of the motivations in performing activities by the elderly. Each interview session took about one (1) to three (3) hours. The respondents' age was between 61 to 77 years old. The total respondents are thirteen (13) and they came from various ethnic groups, which are Malay, Chinese, and Indian. They were six females and seven males respondents. The approach of data analysis is the theory driven content analysis. The productive ageing dimensions framework by prior researchers [7], [9]-[21], is used as the theoretical lens for qualitative data analysis. Data analysis begins with exploring the productive ageing dimensions (activities) of the elderly, followed by intrinsic motivation for productive ageing. Meanwhile the intrinsic motivations theories that have being used in this research consist of Self Determination Theory, Theory of Intrinsically Motivational Instruction and Organizational Citizenship Behavior. The research scope focuses on nonmonetary value activities; therefore, the three dimensions of activities emphasized in this research were Volunteering, Caregiving and Self Development.

## 3. RESULTS AND ANALYSIS

There are five (5) intrinsic features, which are consisting of Autonomy, Competence, Relatedness, Curiosity and Altruism. Therefore, the five intrinsic motivation features related to productive ageing are mapped against the data collected from the elderly are discussed in the following section

## 3.1. Intrinsic motivation for volunteering

Volunteering refers to activities involving any initiatives done without expecting payment. These initiatives are related to social and civic activities. Volunteering activities are consisting of personal advising, expert contribution and committee involvement [38]. A further analysis in volunteering revealed that the intrinsic motivation is autonomy. Autonomy is the feeling that people endorse and regulate their own behavior or they have a sense of free will when they are doing something or making decision. In this study, respondents were motivated by autonomy when they participated in the activities on their own choice and with their volition. They acted on their behavior not because of control or pressure by others. Autonomy in volunteering is shown through the quotations below:

Respondent 1 (one) showed his autonomy motivation by choosing to be an advisor in a personal advice activity.

"I felt pleasure when I shared my experience with others, when I saw a youngster who did something wrong or lost in what he was doing... I chose to give him personal advice and he followed the advice... I explained to them and guided them to the right way... I am satisfied to what I've done."(R1)

Respondent 1 shared his experience as a committee member of an elderly club where he chose to organize activities and make decisions in volunteering activities.

"My position in this senior citizen club is as chairman. I'm very happy doing this job and here in this club, we choose to organize many activities such as religious classes, health programs, travel and tours that are beneficial to our club members and also to the community." (R1)

In the case of Respondent 5, she chose to teach people good things. Usually, she went to her neighborhood to talk about spiritual knowledge. Similarly, Respondent 6 chose to transfer his expertise to the new generation.

"I'm very happy with my life style that I chose where I volunteer to call people to be a good Muslim." (R5)

A further analysis in volunteering revealed that besides autonomy, the intrinsic motivation is competence. According to conceptual definition, competence refers to the desire of people to solve problems with their abilities and concerns the importance of knowledge and skills [36]. This study shows that one of the major motivation factors of the elderly being productive is because of their feeling of competence in giving solutions. Respondent 3 had used her competencies in the activities she had done. She mentioned the importance of knowledge that pushed her to participate in advisory activities.

"My friends in club always ask my opinion and advice that are related to health. This is because I was a nurse before... It gives me pleasure and satisfaction because I can contribute something to them." (R3).

Respondent 9 is still engaging in teaching because he is one of the experts in his subject matter. He supports his students all the time.

"I will come to the university purposely to find out what are problems faced by the students and help them to solve their study problems. I enjoy doing this and feel the satisfaction of what I'm doing."(R9)

One of the respondents (R3) who formerly worked as a nurse supported an elderly club program by volunteering as a committee member in a health checkup program. The quotations below show competence motivation in committee involvement:

"In the elderly club, because of I was a nurse before, I happily volunteered as a committee member to assist hospital people that are involved in health medical check up programs to check the health condition of people in Senior Citizens' Club so that it will help to lessen the burden of the hospital staff for the program..." (R3)

The analysis also shows that relatedness is one of the intrinsic motivations in volunteering. As defined in conceptual definition, relatedness is the desire of humans to establish the relationship between them through interaction and caring [27],[36]. In this study, it showed that all respondents were interacting within the community or families. The following quotation shows relatedness motivation in Personal Advising activities.

"I'm actively involved in 'Tabligh' club at Sri Petaling. I always participate in many activities in the club program. I want to have a good relationship with club members. It is such a pleasure giving personal advice to friends. ..."(R5)

Meanwhile, Respondent 2 said that he needed more friends and could get more friends through committee involvement activities.

"I love to help my neighbor. I always involve myself in wedding ceremonies where I will be one of the waiters (committee) in the event. I love this job. Through these activities, I can find many friends compared to my former working time." (R2)

Meanwhile, Respondent 10 is a caring person who interacts with her neighbors through sharing recipes and by giving some portions of her cooking to her neighbors. She establishes relationships with her neighbors through her expertise in cooking.

"When I cook, I make sure I will cook more and keep some portions to give to my neighbor...people say that I'm good in cooking so I teach my neighbors cooking. I want to be close to my neighbors and friends...I get the ultimate feeling of satisfying...I feel the self fulfillment in this way." (R10)

Lastly, further analysis in volunteering revealed that another intrinsic motivation is altruism. Altruism is defined as being helpful to other people. Altruism is a desire to help other people who need assistance with particular problems [34]. Helping others is one of the promoting factors of productive ageing. Respondents always put others' priorities higher than theirs. In this study, it was found that, respondents were engaged in care giving and volunteering activities because they had altruism behavior. The desire to help other people led the respondents to engage in volunteering activities. Altruism in Volunteering activity is shown through the following quotations.

"Woman's nature is always being willing to visit our friends who are sick and help people in difficulties...We, from the club, always visit people who are sick. We are pleasured to support them. We listen and talk to them by giving them advice...." (R3)

Respondent 3, supports her friends emotionally by giving personal advice and hoping that it will reduce the burden. As mentioned by Respondent 5, she is involved in volunteering activities such as contributing her expertise by reciting the Al Quran in funerals because of her desire to help other people and her feeling of empathy.

"...When I hear that somebody I know has passed away, it is a must for me to visit...I felt empathy for them...I recite the Al\_Quran and help to manage the funeral of the deceased. I do this because I assume this is my responsibility as one of the mosque committee members..." (R5).

One of respondents (R9) stated that he is very much concerned for the welfare of his students without thinking of his condition. He helps his students by sharing his expertise without feeling constraints.

"Students always ask me to come to the university purposely to ask questions related to their subject... I am willingly come to help them even though I'm tired. It is my pleasure to see their success..." (R9)

## 3.2. Intrinsic motivation for caregiving

Caregiving involving unpaid activity with economic values performed with bonding relationship. Caregiving activities that show the responsibility of caregivers are categorized in two duties, which are parenting, and Domestic work [38]. Further analysis shows caregiving intrinsic motivations are autonomy, competence, relatedness and altruism. Autonomous intrinsic motivation in Caregiving which is parenting activity, is shown through the following quotation:

Respondent 4 occupied his time when he got a chance to be in charge of his grandchildren's activities. He chose to send and pick up his grandchildren from school everyday. He is doing these without being controlled by others.

"Our two grandchildren are staying with us. I chose to in charge of the grandchildren's daily activities (R4).

The respondents in this study show that they do the activities because they can choose whatever work they wanted to do. Respondent 10 is willingly to do housework even though she does not do it in her own house.

"I choose to do my work such as cooking, house cleaning whenever I go (children house). I cook for my children and my grandchildren. My family love and appreciate my cooking...what I have done strengthens the family relationship." (R10)

The second intrinsic motivation in caregiving activities is competence intrinsic motivation. Respondents are involved in caregiving activities because of their competencies in solving problems especially for their families. The following captions show competence motivations that push respondents in parenting activities.

One of the respondents (R8) is taking care of her sick son who is suffering from broken a marriage. Respondent 8 is very experienced in marriage matters. She is taking care her adult son and supports him emotionally and physically.

" I supported my son to solve his problem, I took him to stay with me. I supported him in many things and many ways... our relationship is much closer than before." (R8)

Respondent 5, who is good in reading Arabic, teaches her grandchildren to read the Al Quran in her house.

"With the knowledge I have, I teach my grandchildren to read the Al-Quran and read religious books everyday because I love them and want they become good Muslim." (R5)

Meanwhile, the following quotation shows competence in domestic work.

"I cook for my children and grandchildren when I am in their house so that they can eat healthy meals. They will request their favorite dishes. They say that their cook is not as same as mine. They love my cooking..."(R10)

Respondent 10 prepares meals for her family because she is good in cooking. The appreciation given to her by her family makes their relationship good. The respondents were pushed by their knowledge or skills to be productive in care giving activities and these indirectly will make the relationship among them stronger.

Besides autonomy and competence motivations, the respondents in this study are involved in caregiving activities due to their inner needs to establish the relationship within family members and friends. Quotation below shows that relatedness motivation is one the driving factors in care giving activities.

".... I send my son to work at 10:00 every morning and pick him up at 10:00 pm every night. It is my pleasure to do this for him because he is my son and his health condition is not so good. Ever since then, we appreciate each other more... sometimes I think my relationship with my children is poor...I really hope I can improve my relationship with my son..."(R8)

Altruism is also a motivation factor in caregiving activities. The analysis shows that the respondents have strong desire to help other people in caregiving activities. The quotation below shows altruism motivation in care giving activities.

"Once in the while, I will go to my friend's house to give help. I help to do house cleaning and yard cleaning...She is sick and unable to do work anymore. We experience the true value of friendship."(R5)

## 3.3. Intrinsic motivation for self-development

Self-development activities involve any type of activities for self-improvement. The activities including the activities that facilitate independent activities and the living of older people, which provide meaning in their life by not burdening others. Self-development activity can be divided into three sub activities, which are Spiritual Enhancement, Personal Improvement, and Self care [38]. A further analysis in Self Development activities revealed that the intrinsic motivations are autonomy, competence, relatedness and curiosity.

The following quotations show autonomy motivation in self-development activities. As mentioned by Respondent 1, he is interested in joining religious classes because he can get knowledge in many ways, such as listen to lessons or ask questioning to the gurus or friends to improve his spiritual knowledge. They have their own freedom in the activities.

"We are interested in joining religious classes for our self-development and to improve our religious knowledge. We choose to attend the classes regularly. In class, we can ask the "Guru" what we do not understand or we can ask our friends. This activity makes us better Muslim." (R1)

Meanwhile, Respondent 4 chooses to give opinions or comments when he is in discussions. He says that this activity really contributes to his personal development.

"... I chose to write comments and opinions to respond to the discussion about issues that my friends share in Facebook, discussions through Facebook really develop my self esteem ..."(R4)

Respondent 4 is able to be independent and reduce health problems by doing exercise. He makes good decisions regarding to their selve-care.

"I decided to bring along my jogging shoes in my car all the time so that I can easily go for jogging or brisk walking anytime and anywhere. I feel healthy, fresh and proud of myself when I manage to do the physical exercises." (R4)

Secondly, the analysis in self-development shows that competence is one of the important motivations for productive ageing. The respondents' background knowledge or capability helps them to be better persons. Respondent 5 engages in spiritual enhancement activities because she is confident of her ability to learn.

"I spend much time on learning the Al-Quran, I learn the Al-Quran Taranum, Tajwid and Tafsir of the Al-Quran three times a week. I'm glad I was told that, I am a fast learner. The most significant activities that I can do for myself now are, I want to be a good person and get knowledge that can be used here and in the hereafter..."(R8)

Respondent 7 shows that he has confidence with his ability to solve problems and it makes him want to be more productive. His competencies in trouble shooting encourage him in personal development activities.

"I love to repair watches. This is also my hobby. When I'm repairing watches, I will try to fix the problem until I succeed. My precious experience gives me the ideas on how to solve the problem with new skills... I'm very proud of myself." (R7)

The quotation below shows that the respondent knows his abilities in sport activities or health exercise and these make him remain productive in self-care activities.

"I'm good in playing badminton. I participate in many games organized by the Elderly Club Shah Alam...I want to be healthy and this makes me feel healthy..."(R3)

Also of note, some of the elderly were very active in self-development activities because of needs of relatedness. As mentioned by Respondents 6, he participates in social activities to meet his friends in social events and he noticed this activity has improved his personal skills.

"During my free time, I love to spend my time in the club with friends and go for karaoke. It is joyful and my personal skills become better." (R6)

Respondent 5 participates in spiritual enhancement activities not only because of the knowledge, but the most important thing is to establish the relationship with God and other people.

" I go to the religious class to update my knowledge...it is also to have good relationship between me and God and between me with humans..." (R5)

In addition, the respondents are also involved in self-care activities such as joining jogging clubs for the elderly because they want to have more friends. As mentioned by Respondent 4, he wants to feel comfortable and stay active in the community, thus he takes care of his health through brisk walking with friends.

"If we are healthy, it is easier for us to spend our time with friends and family. We know that we not going to bring difficulties to other people if we are healthy...That's why I go for exercise every morning to keep myself healthy." (R4)

Lastly, respondents are filled with curiosity when engaging in self-development activities. Curiosity is a kind of desire to bring better form of knowledge and understanding through fostering active learning and spontaneous exploration. Respondents were engaged in self-development activities because they curious about so many things. In this research, most of elderly are searching for spiritual values in their life here and the hereafter. The following quotation shows curiosity motivation in Spiritual Enhancement activity.

"I'm not good in reading Arabic. Because of that, I am attending Al-Quran classes three times a week so that I will become a better person. Now I have become a better Muslim."(R8)

However, some of participants are involved in activities that develop their skills and knowledge because they have to update their knowledge that supports their interest or daily task. Personal improvement in this study is related to knowledge of improvement in terms of irreligious or worldly. Respondent 9 is motivated to participate in Personal Improvement activity through learning and reading on the Internet due to curiosity in his field of interest in teaching so that he can explain better.

"I love to go to scholar blogs, websites, journals that are related to my interest. I learn many things here. New information makes me confidence to deliver knowledge. And these help me to generate more ideas in delivering knowledge."(R9)

Also of note, curiosity drives the elderly to participate in Self-Care activities. The desire to know the level of body stamina makes respondent 2 does exercise regularly. Meanwhile, Respondent 13 loves to go to the health center that offers health improvement services. She wants to know the effectiveness of the machine on her.

"I do exercise regularly because I want to check my level of endurance...I feel good when I know that I am still capable of doing things." (R2)

## 3.4. Mapping the intrinsic motivation components with productive ageing activities

From the detailed discussion above, it is found that autonomy, competence and relatedness are the motivational factors to participate in volunteering, self-development and caregiving activities. Table 1 shows the mapping result of intrinsic motivation with activities.

Table 1. Intrinsic Motivations for Productive Ageing

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Intrinsic Motivation	Dimension	Sub Activity
Competence, Autonomous. Relatedness, Altruism	Volunteering	Personal Advising, Expert Contribution, Committee Involvement
Competence, Autonomous. Relatedness, Altruism	Caregiving	Parenting, Domestic work
Competence, Autonomous. Relatedness, Curiosity	Self- Development	Spiritual enhancement, Personal Improvement Self-Care

## 4. CONCLUSION

The earlier finding of this study found that the elderly were performing activities in volunteering, self-development, and caregiving [38]. A further analysis in activities of the elderly revealed that five intrinsic motivations that promote productive ageing were identified. These activities are motivated by intrinsic motivations, which consist of autonomy, competence, relatedness, curiosity and altruism. All the participants in this study preferred to involve in activities towards non-monetary returns, which were intrinsically rewarding. Autonomy and competence are among the popular components of intrinsic motivation that have been discussed by prior scholars. In this study, these two intrinsic motivations are prominent reasons for participants to engage in volunteering, caregiving and self-development activities. Once they realized that there are activities allowed them to have an autonomy and they felt they were still needed by the society such as when their advice and their decisions were needed, participants wanted to be as productive as they could in those activities.

Relatedness is another reason for participants to be productive, as participants want to establish relationships. They exhibit their values to the family and society by showing their caring for other people. Participants in this study were engaged in volunteering and caregiving because they had altruism behavior. Through socializing activities such as family socializing or community socializing, the participants' desire to help others was fulfilled. Curiosity is good motivation for self-development. Most of the participants were involved in self-development activities because they realized that they still lacked knowledge. They are also in the group of people searching for a better life here and in the hereafter. Spiritual learning is one of the participants' big interests.

These findings give a direction to the researchers regarding the interests of the elderly or their motivation factors to participate in activities in their own way. Therefore, ICT as intervention of enabler towards intrinsic value is highlighted in this research. Intrinsic motivation components are significant features in ICT for productive ageing. Identification of the ICT features is based on motivation to use the ICT.

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#### REFERENCES

- [1] World Population Ageing 1950-2050, "Population Division, Department of Economic and Social Affairs," United Nations. Report retrieved from http://www.un.org/esa/population/publications/worldageing19502050/
- [2] F. Buckinx, *et al.*, "Burden of frailty in the elderly population: perspectives for a public health challenge," *Arch. Public Health*, vol/issue: 73(1), pp. 19, 2015.
- [3] E. M. Brady, et al., "Barriers to work among the elderly: a connecticut study," J. Appl. Gerontol, vol. 36, pp. 154–156, 1987.
- [4] J. Friedman, et al., "Work and retirement among the elderly in Vietnam," Res. Aging, vol/issue: 23(2), pp. 209–232, 2001.
- [5] R. Ranzijn, "The potential of older adults to enhance community quality of life: links between positive psychology and productive aging," *Ageing Int.*, vol/issue: 27(2), pp. 30–55, 2002.
- [6] J. Kim, et al., "The productive aging concept and social work students' perceptions toward an older population," J. Soc. Serv. Res., vol/issue: 43(2), pp. 149–155, 2017.
- [7] R. N. Butler, "The Longevity Prescription The 8 Proven Keys to a Long, Healthy Life," Avery, New York, 2010.
- [8] T. Holmes, *et al.*, "The Common Cause Handbook: A Guide to Values and Frames for Campaigners, Community Organisers, Civil Servants, Fundraisers, Educators, Social Entrepreneurs, Activists, Funders, Politicians, and Everyone in Between," Public Interest Research Centre, 2012.
- [9] A. R. Herzog, et al., "Age differences in productive activities," J. Gerontol. Soc. Serv., vol. 44, pp. 129–138, 1989.
- [10] S. Bass, et al., "Achieving a Productive Aging Society," Westport, CT, 1993.
- [11] P. O. Reilly and F. G. Caro, *Prod. Aging*, vol. 38, pp. 37–41, 2013.
- [12] J. A. Aquino and D. W. Russell, "Employment status, social support, and life satisfaction among the elderly," *J. Couns. Psychol.*, vol/issue: 43(4), pp. 480, 1996.
- [13] N. M. Howell, *et al.*, "Productive Aging: Concepts and Challenges," The John Hopkins University Press, Baltimore, 2001.
- [14] M. Sherraden and N. M. Howell, "Productive aging: theoretical choices and directions," in N. M. Howell, *et al.*, "Productive Aging: Concepts and Challenges," The John Hopkins University Press, Baltimore, 2001.
- [15] A. T. Sasso and R. W. Johnson, "Does informal care from adult children reduce nursing home admissions for the elderly?" *Inquiry*, vol/issue: 39(3), pp. 279–297, 2002.
- [16] J. S. Hee, "Analysis of contribution and relate factors of the elderly: comparison between Korea and Canada," *J. Korean Gerontol. Soc.*, vol. 25, pp. 155–170, 2005.
- [17] H. H. Bang, "The relationship between productive activities and successful aging among the aged," *J. Welfare Aged*, vol. 29, pp. 203–235, 2005.
- [18] R. F. Ballesteros, et al., "Productivity in old age." Res. Aging, vol/issue: 33(2), pp. 205–226, 2011.
- [19] D. Peng and W. Fei, "Productive ageing in China: development of concepts and policy practice" *Ageing Int.*, vol. 38, pp. 4–14, 2013.
- [20] N. M. Howell and Y. Wang, "Productive engagement of older adults: elements of a cross-cultural research agenda," Ageing Int., vol. 38, pp. 159–170, 2013.
- [21] J. Kim, "Productive aging of the elderly in Japan," Korean Soc. Sci. J., vol/issue: 1(1), pp. 1–26, 2010.
- [22] A. P. Achilleos, *et al.*, "The connected vitality system: Developing an effective social presence system for older adults," *12th International Conference on Telecommunications, Crotia*, pp. 199-206, 2013.
- [23] A. Gros, et al., "Recommendations for the use of ICT in elderly populations with affective disorders," Front. Aging Neurosci., vol. 8, pp. 269, 2016.
- [24] Z. Roupa, et al., "The use of technology by the elderly," Health Sci. J., vol. 2, pp. 118–126, 2010.

[25] E. Kahana, et al., "Altruism, helping, and volunteering: pathways to well-being in late life," J. Aging Health., vol/issue: 25(1), pp. 159–187, 2013.

- [26] T. Goldhaber, "Using Theories of Intrinsic Motivation to Support ICT Learning for the Ageing Population," Springer, London, pp. 359-362, 2012.
- [27] T. Giesbrecht, et al., "A Self-Determination Perspective on IT-based Citizen Advisory Support," 45th Hawaii International Conference on System Sciences, pp. 2501–2510, 2012.
- [28] L. V. Brown, "Psycology of Motivation," New York: Nova Science Publisher, 2007.
- [29] M. Csikszentmihalyi, "Flow: The Psychology of Optimal Experience," New York, NY: Harper and Row, 1990.
- [30] X. Wang, "Relatedness Need and Users' Satisfaction with Social Network Sites: A Self-Determinant Perspective," pp. 309–312, 2012.
- [31] D. Schunk, et al., "Motivation in education: Theory, research and applications," Pearson, 2014.
- [32] M. R. Lepper and M. Hodell, "Intrinsic motivation in the classroom," in C. Ames and R. Ames, "Research on motivation in education," vol. 3, pp. 73-105, 1989.
- [33] E. L. Deci and R. M. Ryan, "Intrinsic Motivation and Self-Determination in Human Behavior," Plenum Press: New York, 1985.
- [34] D. W. Organ, "Organizational citizenship behavior: The good soldier syndrome," Lexington Books, Lexington, MA, 1988.
- [35] T. W. Malone, "Toward a theory of intrinsically motivating instruction," Cognitive Science, vol/issue: 5(4), pp. 333-369, 1981.
- [36] E. L. Deci and R. M. Ryan, "The 'what' and 'why' of goal pursuits: Human needs and the self-determination of behaviour," *Psychological Inquiry*, vol/issue: 11(4), pp. 227-268, 2000.
- [37] A. Amin, et al., "Theoretical Framework of the Effect of Extrinsic Rewards on Individual's Attitude Towards Knowledge Sharing and the Role of Intrinsic Attributes," 2009 International Conference on Computer Technology and Development, pp. 240–243, 2009.
- [38] N. Abd Karim, *et al.*, "International Conference of Reliable Information and Communication Technology: Recent Trends in Information and Communication Technology," *LNDECT*, vol. 5, pp. 781-788, 2017.

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