

Engaging Researchers as Academic Professionals via Online Gamified Service: A Participatory Study

Haque Md Sanaul, Kehoe Joseph, Shaima Mujiba, Rahman S.M.Musfequr, O'Broin Daire

This is a Publisher's version version of a publication
published by EUROSIS

in 24th International Conference on Intelligent Games and Simulation (GAME-ON 2023)

DOI:

Copyright of the original publication:

© EUROSIS-ETI 2023

Please cite the publication as follows:

Haque, M.S., Kehoe, J., Shaima, M., Rahman, S.M.M., O'Broin, D. (2023). Engaging Researchers as Academic Professionals via Online Gamified Service: A Participatory Study. 24th International Conference on Intelligent Games and Simulation (GAME-ON 2023).

**This is a parallel published version of an original publication.
This version can differ from the original published article.**

ENGAGING RESEARCHERS AS ACADEMIC PROFESSIONALS VIA ONLINE GAMIFIED SERVICE: A PARTICIPATORY STUDY

Md Sanaul Haque ^{1,2}

Joseph Kehoe ²

Mujiba Shaima ³

S M Musfequr Rahman ⁴

Daire O'Broin ²

LUT University, Lappeenranta, Finland ¹

South East Technological University (SETU), Carlow Campus, Ireland ²

Monroe College, New York, USA ³

Tampere University, Tampere, Finland ⁴

E-mail: sanaul.haque@lut.fi; mshaima6806@monroecollege.edu; smmusfequr.rahman@tuni.fi; {daire.obroin, joseph.kehoe}@setu.ie

KEYWORDS

Self-Determination Theory, Digital Gamified System, Interpersonal Relationships, Participatory Study.

ABSTRACT

Self-Determination Theory (SDT) seeks to underline how, why, and in what contexts an individual's behavior is self-motivated, and it has three needs of autonomy, competence, and relatedness. However, it is unknown about utilizing Self-Determination Theory (SDT) needs of relatedness in citizens' motivation. Citizens such as academic professionals frequently need clarification on how they are progressing on research to avoid feelings of nonbeing progression in achieving their research goal. They may also feel less connected with colleagues and supervisors. To increase their SDT needs, an online gamified service using google drive has been developed. However, we wanted to explore the core elements that support them in doing their work and interacting with others by using gamified service. To do this, we conducted a participatory study with focused group members of 9 researchers as academic professionals from different Universities. The result of the study has informed us that trust and privacy are key elements and other issues that are related to their engagement. The level of autonomy, competence, and relatedness is linked to this, which will demonstrate the effect of an online gamified service on SDT needs.

INTRODUCTION

Self-Determination Theory (SDT) highlights how, why, and in what circumstances an individual's behavior is motivated by their own interests [Deci and Ryan, 2002]. Numerous studies have been conducted on SDT in various fields, including parenting, employment, sport, and health care, more than 30 years after it was first published [Deci and Ryan 1985a; Deci and Ryan 1985b]. Most SDT-focused research has been conducted on learning relevance [Spittle et al. 2009]. The empirical literature on the constructive effects of SDT needs satisfaction is growing [Deci and Ryan, 2008]. SDT needs (autonomy, competence, and relatedness) have been used in employees' motivation [Meyer and Gagne, 2008], but SDT has yet to be utilized appropriately on researchers'

motivation. It needs to be clarified about employing SDT needs within the domain of researchers working in academia [Hegarty, 2011], precisely their motivation towards work progression and socialization with others. The level of autonomy, competence, and relatedness is often lower amongst researchers as academic professionals.

Academic professionals are more likely to need clarification on their work, which makes them feel that they need to make progress toward reaching their goal. They are more prone to have a negative relationship with their coworkers. A large-scale research review on the interrelationship's link with living a long healthy, disease-free life found that a low level of social interaction has as much of an effect on our mortality rate as not exercising and is twice as detrimental as being overweight. The review also stated that loneliness affects morbidity as much as an alcohol or smoking problem [Holt-Lunstad et al. 2010]. There are other negative consequences, e.g., disruption in work and dropping out of their training, courses, and programs about education and research [Appel and Dahlgren 2003; Wright 2003].

Nowadays, digital services solutions are easily accessible to support and motivate academic professionals to progress in research and other work. For example, ProDoc is a monitoring service aiming to mitigate the problem of early-stage researchers, i.e., delay in completion of their degree and supervision. Human minds can be persuaded by technology persuading individuals to change their attitudes, habits, and behaviors [Hsu et al. 2014; Haque et al. 2016; Haque et al. 2022; Alam et al. 2022]. There is an intervention that applied SDT three needs to motivate employees to do physical activity intrinsically [Haque et al. 2020a], but it was not grounded explicitly in academic professionals' motivation toward their work progression and support of social interaction with their colleagues. Other research applies techniques such as gamification to motivate students in their education and learning. One has shown that a gamified system increased researchers' such as Ph.D. researchers' progression but not their social relationships with colleagues and supervisors [Haque et al. 2018]. An online zero-cost tool such as google drive (in which feedback message has been applied as the game-design element), which is entirely free to use, has been utilized by [Haque et al. 2023] for academic professionals such as supervisors, Ph.D., post-docs to peer-review each other's work and progress in their research work. They

adopted the model [Haque et al. 2017] to design the online gamified service. However, this study did not consider the key concern related to the gamified service. Hence our study is based on this research gap. In this research, we aim to find out the core element in an available online tool such as google word/excel that supports engaging the relevant stakeholders, i.e., academic professionals and their work colleagues, towards work progression and interpersonal relationship building. In this study we mainly considered researchers as academic professionals and focused on their wellbeing and work progress. Thus, this research seeks to find the research question,

What is the core element of engaging researchers using a gamified service to improve work progression and their interpersonal relationships with colleagues through fulfilling three SDT needs of autonomy, competence, and relatedness?

To answer the research question, we conducted a participatory study by conducting a tutorial study via Google Jam board in a hybrid conference. This tutorial used a questionnaire developed by two lecturers from Finland.

The remainder of this paper is organized as follows. Section two describes the background. The third section describes methods. In sections four and five, we presented the results and discussion and concluded in section six.

LITERATURE REVIEW

Self-Determination Theory

According to Self-Determination Theory (SDT), by satisfying the three psychological needs of autonomy, competence, and relatedness, researchers can be intrinsically driven to advance in attaining their research aim and socially interact with other research students. According to [Deci and Ryan, 2002], "the perceived origin or source of one's behavior" is the definition of the psychological desire for autonomy. The concept of autonomy is the ability to evaluate one's social surroundings and make decisions to carry out a task. Choosing a daily job, such as drafting a 500-word piece of a literature review. Psychological need Competence is defined as "feeling effective in one's ongoing interactions with the social environment and experiencing opportunities to exercise and express one's capabilities" [Deci and Ryan, 2002]. Writing a daily target of 500 words to finish a part of a literature review is an example of managing a task to completion. This is what it means to be competent. The desire to connect to others is the final requirement for relatedness [Deci and Ryan, 2000]. Therefore, relatedness is the sense of connecting with people, such as when talking with research students and supervisors during a daily coffee break or weekly meeting. These three psychological demands have the effect of increasing self-determination and motivation (Fig. 1).

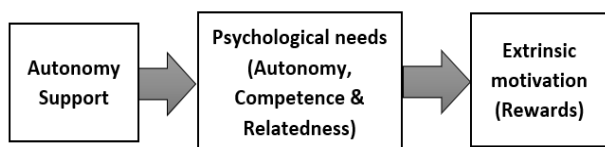


Figure 1: Approach of SDT sequence [Haque et al. 2017]

According to [Vansteenkiste et al. 2006], SDT needs are positively associated, and their satisfaction predicts students' psychological health, depressive symptoms, and liveliness. Compared to lesser levels, a high level of autonomy has been demonstrated to guard against depressive symptoms [Vansteenkiste et al. 2006]. Moreover, according to a recent study, patients who receive autonomy support from healthcare professionals are more likely to engage in personal health behaviors, perceive themselves as competent to do those behaviors, and even feel more mindful, which helps them meet the SDT needs of autonomy, competence, and relatedness [Martin et al. 2017].

However, Serious implications, such as low levels of autonomy related to releasing depressive feelings, could result from not meeting the SDT demands [Vansteenkiste et al. 2006]. Low levels of competence are associated with decreased intrinsic motivation [Vallerand and Reid, 1984]. Considering this, low levels of autonomy and competence may prevent students from moving forward with their research goals and from connecting with their supervisors to communicate their capacities to do so. Low levels of relatedness may prevent group engagement and impact researchers' feelings of loneliness and isolation [Cornwell and Waite, 2009].

Interpersonal Relationships

Research has shown a strong correlation between relationship attachment security and satisfaction of the need for connection. This suggests that a satisfying friendship, like a best friend, can predict relationship happiness. More importantly, these relationships' fulfillment of independence and expertise requirements indicates attachment security and relationship quality. This suggests that a healthy, secure relationship requires connection, independence, and expertise [La Guardia et al. 2000].

Researchers working with colleagues and supervisors in a multi-disciplinary setting may have diverse educational and work backgrounds. A supportive network platform promotes collaboration and career advancement by facilitating experience sharing. Postgraduate research students benefit from socialisation to encourage interaction networks. Researchers can share ideas and build relationships through social interaction. Future collaboration and career growth require a strong network platform [Stobbe et al. 2013]. Researchers "acquire the values and attitudes, the interests, skills, and knowledge, in short, the culture, current in the groups of which they are, or seek to become a member" [Merton et al. 1957]. In addition, efforts could be made to highlight a networking platform for the socialisation of researchers in their daily research tasks and scholarly activities [Weidman et al. 2001], such as sharing their ideas, values, thoughts, and experiences with others, specifically their colleagues and supervisors.

Moreover, meaningful stakeholder engagement occurs with higher trust levels [Soobiah, 2019]. This is because an organization entity such as an academic/research environment believes in the reliability, truth, or ability of someone who is part of it. Within the context of technology and building trust, online platforms like social media have improved international connections and enhanced the online disclosure of personal information. The rise of ubiquitous and ambient

technology further amplifies the risk of unintentional or unauthorized sharing of personal data. Additionally, information accumulation and easy referencing across databases heighten the potential for inadvertent disclosure [Adam et al. 2010].

According to [Dolatabadi and Budinskai 2020], in a gamified-oriented ecosystem for the stakeholders, mechanics, dynamics, and feelings can create value through rewards such as early reward and respect that could be facilitated to them within the service or application. Researchers utilized the self-determination theory to develop a gamified intervention that increased the social connectedness of users [Haque et al. 2020]. Consequently, a gamified online tool could add value to their participation in this networking platform to monitor their work and progress and build social interaction.

METHODOLOGY

Participatory Study

To answer the research question, a participatory workshop analysis [Chambers, 2012] has been conducted. To gain knowledge about citizen engagement, a tutorial of 90 minutes was conducted at a hybrid conference named International Conference on Behavioural and Social Computing, or BESC 2022. All the registered participants had the option to participate in the pilot study in response to an invitation email that had been sent to them earlier before the tutorial. The study was taken dated on 31st October 2022, in a hybrid mode at Matsuyama University in the city of Matsuyama, Japan.

Participants.

To recruit the participants, invitation emails as a reminder to take part in the tutorial study were sent out to all the registered participants of the BESC 2022 conference. All the invited individuals were enrolled PhD level full-time or part-time, working as Researchers or in other academic positions such as Lecturer/Professor, etc. Out of those, nine registered participants took part in the tutorial study. A doctoral consortium study was happening in parallel, which led to a small number of participants in our study. However, we also wanted a relatively smaller group for a focused group study to provide a more intensive course in the session.

Questionnaire.

Two lecturers developed the questionnaires to run the tutorial session and receive their input from the participants.

Table 1: Questionnaire on Google Jam Board

<p>Q1) What key elements affect engagement in a service such as a gamified online service?</p> <p>Q2) What key elements-related concerns would you have regarding gamified online service?</p> <p>Q3) How do the key elements motivate researchers' engagement with gamified online services?</p>

Procedure.

During the session, the group moderator started an open discussion based on the tutorial talk on engaging citizens by focusing on engaging the academic professionals with their peers and motivating them toward their progression. In the research article, we discussed an online open tool (such as using Google Sheets) for the researchers, designed and developed by [Haque et al. 2023].

Data collection.

Google Jam Board online has been used to collect the participants' input. They were writing down their thoughts and feelings based on the questions which were set up to the Jam board. We then analyzed their input data.

RESULTS

Key Elements to Engage Researchers

Participants felt that “Trust and Privacy” were the key elements affecting engagement in a service such as a gamified service. So, if an online gamified service is trustworthy and reliable, they have the flexibility to mix and interact with their colleagues.

Trust and Privacy related concerns regarding Online Gamified Service

Participants listed three essential issues when thinking of key elements to engage researchers (Fig. 2).

- *Interaction more with cognitive confidence*
- *Interaction for instant gratification*
- *Fear of missing information*

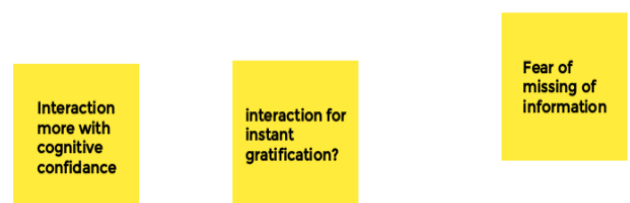


Figure 2: Participants' input about trust and privacy-related concerns about a gamified online service.

How will key elements motivate Researchers' Engagement?

In terms of trust influence in engaging the researcher, participants highlighted (Fig. 3)

- *Shared publicly (feel shy to share any info),*
- *Terms and conditions of the application/service, and*
- *Fear of machine monitoring*



Figure 3: Participants' input about trust and privacy-related concerns about a gamified online service.

DISCUSSION

Principal Findings

Some researchers find it challenging to interact with others due to personal behaviour, which often indicates a psychological health issue [Harley therapy, 2023]. They might be required to change or alter their mind or ask for assistance to experiment with new ways of thinking and acting, such as using our gamified service to complete daily research work completion. Hence, one possible way to increase the level of autonomy: researchers might have a daily goal to meet the long-term goal and divide their tasks into small daily tasks as tiny daily habits towards a more significant milestone. Researchers' competence level can be higher if they are confident enough to do their daily work by applying the gamified tool. Relatedness happens when they relate to their colleagues and peers once satisfied with the essential elements ("Trust and Privacy") to engage within the service.

Considering the three essential issues when thinking of key elements to engage researchers.

Lack of cognitive confidence is stated as a distrust of one's perception, attention, and memory [Ouellet-Courtois et al. 2018]. Confidence can be applied to drive other behaviors, for instance, social interaction [Peters, 2022], i.e., in our study, we could add this to the researchers' connection with their colleagues. Thus, any gamified service may create cognitive confidence among them. On the other hand, instant gratification is a term that refers to the temptation, and resulting tendency, to forego a future benefit to obtain a less rewarding but more immediate benefit. Instant gratification has been used to modify human behavior in industries such as gaming and social media. Study found that instant gratification could be utilized to successfully promote best practice guidelines and workbook adherence among stakeholders such as care providers [Deo et al. 2020]. Thus, a gamified service for the researchers could be initiated, followed by the adoption of instant gratification techniques installed in it.

Things to consider making engagement happen.

When we think of sharing publicly, it is about citizens' participation with smart services that require sharing personal information or engaging in private actions in public is strongly

influenced by their level of trust. Therefore, researchers are more willing to participate if they feel confident that their data will be treated carefully, kept secure, and not abused or exploited. Our proposed gamified service could be implemented in such a way that it will ensure that information is made public [Wang et al. 2022]. Moreover, it is significant to know the researchers' peers, such as identifying the relevant stakeholders [Nipa et al. 2021] within the online gamified service so that researchers could feel flexible to share their information within the ecosystem.

Terms and Conditions of the Application: Trust in digital services is influenced by the transparency and clarity of the application's terms and conditions. Users need to trust that the times are fair, their rights are protected, and their data will be used in line with their expectations and preferences.

Fear of Machine Monitoring: When people interact with digital services that require machine monitoring or data collection, trust is crucial. Users could be hesitant to participate completely if they worry that their actions will be continuously observed without their permission or if they are worried about possible bad outcomes or privacy violations [Pop et al. 2022].

Their level of trust and privacy significantly shapes researchers' engagement with an online gamified service. The appropriate treatment of personal data, the clarity of the terms and conditions, and the degree to which users are at ease with automated data collecting and monitoring are some elements that affect it. The online gamified service could promote the long-term adoption of digital services, trust-building, and positive engagement (see Fig. 4).

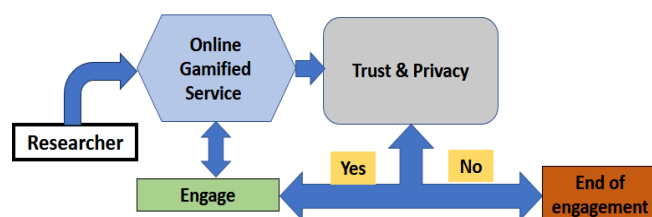


Figure 4: Our proposed framework for engaging researchers

Based on the participatory study, our future gamified service should focus more on some feedback received by the participants. For example, in the open discussion during the tutorial talk, one participant highlighted the objective data of the students and how to get it. One possible answer for this was using lock screen data. Another participant mentioned making the gamified service enjoyable and funny so that researchers can enjoy activities such as dancing or body movement arts and activities to engage them more.

Limitations and Future Work

Although participants were from different regions, such as Asia, Europe, and Australia, the number of participants was comparatively low, and further study could facilitate more participants by dividing them into different groups. For example, participants could be divided into rooms in the online Zoom platform.

This is a work-in-progress paper. Future work could focus on researchers' daily activities based on SDT's three needs [Haque et al. 2020b] and how they think of utilizing a gamified service based on their daily needs. Future research

will run over a longitudinal experimental study using a within-subjects technique with a quantitative and qualitative method to find the long-term effect of the online gamified service. Intrinsic Motivation Inventory (IMI) measurement [Ryan, 1982] will be applied to generate users' data output. This will demonstrate the impact of a zero-cost online gamified service on SDT's basic needs of autonomy, competence, and relatedness.

CONCLUSION

In the research for this paper, we conducted a focused group-based participatory study on the citizens in the university context, such as researchers and other working professionals within the academic researchers. Participants input their details into the google jam board live session. The result of the study has informed us that the participants highlighted trust and privacy as the core elements to engage them with their colleagues and others in an online platform such as a gamified tool. This study demonstrates how trust and privacy as the core element of any technological solution can significantly affect citizens' SDT psychological needs of autonomy, competence, and relatedness. The results of this study could be applied to improve the effectiveness of designing and developing a digital gamified service to motivate individuals toward their work progression and peering with others. This could also be useful as a workbook and guidelines for citizens' participation and engagement in the group environment. Future research should aim to implement the gamified service further based on researchers' feedback and recommendations.

REFERENCES

- Alam, M., Haque, M.S., Tripathi, A., & Vainionpää, F. (2022). Prototyping a gamified system to persuade school-age children in developing countries: using Kahoot in online environments. In Adjunct Proceedings of the 17th International Conference on Persuasive Technology 2022: The 1st International Workshop on Digital Nudging and Digital Persuasion (DNDP 2022). RWTH Aachen University.
- Appel, M. and Dahlgren, L. (2003). Swedish doctoral students' experiences on their journey towards a PhD: obstacles and opportunities inside and outside the academic building, *Scandinavian Journal of Educational Research*, 47(1),89–110.
- Adam N. Joinson, Ulf-Dietrich Reips, Tom Buchanan & Carina B. Paine Schofield (2010). Privacy, Trust, and Self-Disclosure Online, *Human-Computer Interaction*, 25:1, 1-24.
- Chambers, R. (2012). *Participatory workshops: A Sourcebook of 21 Sets of Ideas and Activities*, Routledge press.
- Cornwell, E.Y., & Waite, L.J. (2009). Social disconnectedness, perceived isolation, and health among older adults, *Journal of health and social behavior*, 50(1), 31-48.
- Deo N, Johnson E, Kancharla K, O'Horo JC, Kashyap R. (2020). Instant Gratification as a Method to Promote Physician Practice Guideline Adherence: A Systematic Review. *Cureus*. 2020 Jul 25;12(7):e9381. doi: 10.7759/cureus.9381. PMID: 32850248; PMCID: PMC7445093.
- Deci, E.L., & Ryan, R.M. (1985a). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum.
- Deci, E.L. & Ryan, R.M. 1985b. "Toward an Organismic Integration Theory. In *Intrinsic Motivation and Self-Determination in Human Behavior*", Springer US, 113-148.
- Deci, E.L. & Ryan, R.M. (2000). The "what" and "why" of goal pursuits: Human needs and the self determination of behavior. *Psychological Inquiry*, 11, 227–268.
- Deci, E.L. & Ryan, R.M. (2002). *Handbook of self-determination research*. Rochester, NY.
- Deci, E.L., & Ryan, R.M. (2008). Self-determination theory: A macrotheory of human motivation, development, and health, *Canadian Psychology/Psychologie canadienne*, 49(3),182–85.
- Dolatabadi, S.H. and I. Budinskai, I. (2020). A New Method Based on Gamification Algorithm to Engage Stakeholders in Competitive Markets, 2020 IEEE 24th International Conference on Intelligent Engineering Systems (INES), Reykjavik, Iceland, 2020, pp. 11-18, doi: 10.1109/INES49302.2020.9147196.
- Holt-Lunstad J, Smith TB, Layton JB. (2010). Social relationships and mortality risk: a meta-analytic review. *PLoS Med*. 2010 Jul 27;7(7):e1000316. doi: 10.1371/journal.pmed.1000316. PMID: 20668659; PMCID: PMC2910600.
- Haque, M. S., Abdullah, W. M., Rahaman, S., Kangas, M., & Jämsä, T. (2016). Persuasive health and wellbeing application: A theory-driven design in promoting physical activity. In 2016 International Conference on Medical Engineering, Health Informatics and Technology (MediTec) (pp. 1-5). IEEE.
- Haque, M.S., O'Broin, D. & Kehoe, J. (2017). Designing a Theory-Driven System Model for Postgraduate Research Students to Encouraging Progression and Social Connectedness, CEUR-WS The 1st gamiFIN Conference, May 2017. Pori, Finland.
- Haque, S., Konopelko, M., O'Broin, D. & Kehoe, J. (2018). Prototyping a gamified app to investigate the effect of an individual game element in encouraging progression and social connectedness: An empirical approach "ACPI The 12th European Conference on Game-Based Learning (ECGBL 2018)", Niece, France.
- Haque MS, Kangas M, Jämsä T. (2020a). A persuasive mHealth behavioral change intervention for promoting physical activity in the workplace: feasibility randomized controlled trial. *JMIR Form Res*;4(5):e15083.
- Haque, S., O'Broin, D., & Kehoe, J. (2020b) Effects of daily routine on students' SDT needs satisfaction : a pilot study towards developing a digital gamified system. In: Veloso, Ana; Mealha, Oscar; Costa, Liliana (eds.) Proceedings of GAME-ON: 21st Annual European GAME-ON '2021 Conference on Simulation and AI in Computer Games, Unviersidade de Aveiro, Portugal, September 24-25, 2020, pp. 1-6.
- Haque, M. S., Lanzilotti, R., & Jämsä, T. (2022). Do nudges work? Using personal normative message in mHealth intervention to dissuade from physical inactivity. In First International Workshop on Digital Nudging and Digital Persuasion, DNDP.
- Haque, M.S., Rahman, M., Rahaman, S., O'Broin, D., & Kehoe, J. (2023). Does peer-review feedback promote interpersonal relationships among Ph.D. students and supervisors? A self-determination theory perspective, 11th International Conference on Behavioral Change Support Systems (BCSS 2023), Eindhoven, The Netherlands.
- Hsu, A., Yang, J., Yilmaz, Y.H., Haque, M.S., Can, C., & Blandford, A.E. (2014). Persuasive technology for overcoming food cravings and improving snack choices. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '14). Association for Computing Machinery, New York, NY, USA, 3403–3412. <https://doi.org/10.1145/2556288.2557099>
- Hegarty, N. (2011). Adult learners as graduate students: Underlying motivation in completing graduate programs. *The Journal of Continuing Higher Education*. 59, 146–151.
- La Guardia, J.G., Ryan, R.M., Couchman, C.E., Deci, E.L. (2000). Within-person variation in security of attachment: a self-determination theory perspective on attachment, need fulfillment, and well-being. *Journal of personality and social psychology*. 79, 367.
- Merton, R.K., Reader, G.G., Kendall, P. eds (1957). *The Student-Physician: Introductory Studies in the Sociology of Medical Education*. Harvard University Press, Cambridge, MA.
- Meyer, J., & Gagnè, M. (2008). Employee Engagement From a Self-Determination Theory Perspective. *Industrial and Organizational Psychology*, 1(1), 60-62. doi:10.1111/j.1754-9434.2007.00010.x

Martin, J.J., Byrd, B., Wooster, S., and Kulik, N. (2017). Self-determination theory: the role of the health care professional in promoting mindfulness and perceived competence, *Journal of Applied Biobehavioural Research*.

Nipa, N. S., Alam, M., & Haque, M. S. (2021). Identifying relevant stakeholders in digital healthcare. In *Applied Intelligence and Informatics: First International Conference, AII 2021, Nottingham, UK, July 30–31, 2021, Proceedings 1* (pp. 349-357). Springer International Publishing

Ouellet-Courtois, C., Wilson, S., & O'Connor, K. (2018). Cognitive confidence in obsessive-compulsive disorder: A systematic review and meta-analysis. *Journal of Obsessive-Compulsive and Related Disorders*, 19, 77–86.

Peters, M.A.K (2022). Confidence in decision making, Oxford Research Encyclopedia of Neuroscience.

Pop R.A., Săplăcan Z., Dabija D.C., Alt M.A (2022). The impact of social media influencers on travel decisions: the role of trust in consumer decision journey. *Curr. Issues Tourism*.25(5):823–843.

Ryan, R.M. (1982). Control and Information in the intrapersonal sphere: An extension of cognitive evaluation theory, *Journal of personality and social psychology*, 43(3).

Stobbe, M., Mishra, T., Macintyre, G. (2013). Breaking the ice and forging links: the importance of socializing in research. *PLOS Computational Biology*. 9, e1003355.

Spittle, M., Jackson, K. Casey, M.M. (2009). Applying Self-Determination Theory to understand the motivation for becoming a physical education teacher, *Teaching and Teacher Education*, 25(1), 190-197.

Soobiah C, Straus SE, Manley G, Marr S, Paus Jenssen E, Teare S, Hamid J, Tricco AC, Moore A. (2019). Engaging knowledge users in a systematic review on the comparative effectiveness of geriatrician-led models of care is possible: A cross-sectional survey using the Patient Engagement Evaluation Tool. *J Clin Epidemiol*. Sep;113:58-63.

Vallerand, R. J., & Reid, G. (1984). On the causal effects of perceived competence on intrinsic motivation: A test of cognitive evaluation theory, *Journal of Sport Psychology*, 6(1), 94–102.

Vansteenkiste, M., Lens, W., & Deci, E.L. (2006). Intrinsic versus Extrinsic Goal-Contents in Self-Determination Theory: Another Look at the Quality of Academic Motivation, *Educational Psychologist*, 41, 19-31.

Wang C.A., Karahanna E., Xu, Y. (2022). Peer privacy concerns: conceptualization and measurement. *Manag. Inform. Syst. Quarterly*. 46(1):491–530.

Weidman, J.C., Twale, D.J., Stein, E.L. (2001). Socialization of Graduate and Professional Students in Higher Education: A Perilous Passage? ASHE-ERIC Higher Education Report, Volume 28, Number 3. Jossey-Bass Higher and Adult Education Series. Jossey-Bass, Publishers, Inc.

Wright, T. (2003). Postgraduate research students: people in context? *British Journal of Guidance and Counselling*, 31(2), 209–227.

WEB REFERENCES

Harley therapy. 2023. Connecting with People. [Online] Available from: "https://www.harleytherapy.co.uk/counselling/connecting-with-people.htm." [Accessed 01 July 2023]

AUTHOR BIOGRAPHIES

MD SANAU HAQUE holds a Ph.D. in Medical Physics Technology from University of Oulu, an MSc in Telecommunications in the Business Environment from Queen Mary, University of London, and a BSc (Hons) in Business Information Systems from University of East London. Since 2014, he has been conducting multidisciplinary collaborative research activities of how to design and develop Resilient and Sustainable Digital Solutions towards Human Behavioural Change. He is the joint course leader for MSc module Software and Application Innovation at LUT University. He is a member of GAABS, IEEE and IAENG. His favourite fish is Ilish (Hilsa ilisha).

MUJIBA SHAIMA, MBA, MSc is a Software Developer and currently pursuing her second master's degree in computer science at Monroe College in New York. She has been employed since 2011 in Bangladesh's renowned banking and pharmaceutical industries as a Software Developer and Quality Assurance Engineer.

S M MUSFEQUR RAHMAN is currently pursuing a Doctoral degree in Humans and Technology within the Faculty of Information Technology and Communication Sciences at the University of Tampere. He holds a Master of Science (Technology) in Electrical Engineering from the same University. Since 2018, Rahman has been engaging in multidisciplinary research on RFID, rehabilitation, HCI, and EEG system prototyping, and the utilization of gamification techniques. His preferred pastime is socializing.

DAIRE O'BROIN holds a Ph.D. in Computer Science from Trinity College Dublin, which focused on approaches to developing the conditions of flow. He has been a lecturer at SETU since 2008, where he teaches on the Computer Games Development programme. His research interests include increasing engagement and intrinsic motivation in games and learning.

JOSEPH KEHOE holds a PhD in Computing from Dublin City University and an MSc from University College Dublin. He has worked in education at both secondary and tertiary levels. He has worked as a consultant in industry and ran his own company doing consultancy, training, and custom software development for a number of years. He is course director of the BSc in Software Development and has previously been course director of the BSc in Computer Games Development. While acting as head of department of Computing (2002-2004) he completed the first programmatic review of the department, set up the summer school in computing and helped set up the Computer Games Degree. He lectures to all levels and was previously joint leader of the compuCORE research centre in SETU.