



BUCKINGHAMSHIRE NEW UNIVERSITY

EST. 1891

Downloaded from: <https://bnu.repository.gulidhe.ac.uk/>

This document is protected by copyright. It is published with permission and all rights are reserved.

Usage of any items from Buckinghamshire New University's institutional repository must follow the usage guidelines.

Any item and its associated metadata held in the institutional repository is subject to

Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND 4.0)

Please note that you must also do the following;

- the authors, title and full bibliographic details of the item are cited clearly when any part of the work is referred to verbally or in the written form
- a hyperlink/URL to the original Insight record of that item is included in any citations of the work
- the content is not changed in any way
- all files required for usage of the item are kept together with the main item file.

You may not

- sell any part of an item
- refer to any part of an item without citation
- amend any item or contextualise it in a way that will impugn the creator's reputation
- remove or alter the copyright statement on an item.

If you need further guidance contact the Research Enterprise and Development Unit
ResearchUnit@bnu.ac.uk

An Exploration of Contemporary Factors that Influence Adoption of Instant Messaging by Academics in Higher Education

Jonathan Jackson

Buckinghamshire New University
Jonathan.Jackson@bnu.ac.uk

Nicholas M Day

Buckinghamshire New University
Nicholas.Day@bnu.ac.uk

Nataliya Mogles

Northeastern University London
Nataliya.Mogles@nulondon.ac.uk

Research In Progress

Abstract

Instant messaging (IM) has been found to support both synchronous and asynchronous learning in Higher Education Institutions (HEIs), but the efficacy of this approach is heavily reliant on staff adoption. Related work has focussed on the effect of IM on learners; frequency of usage, perception of usefulness, and its relationship with academic performance. However, this research will explore perceptions of academic staff towards the use of IM to support learners, and identify and classify the barriers that hinder academic staff from incorporating IM into their practice. This work proposes questions intended to capture the impact of IM on stress and academic workload, which will be first evaluated by a small sample of academics. This feedback will inform the development of the questionnaire before it is published to a wider audience of academics. This Research in Progress paper is informed by the authors' experience of teaching apprentice students within HE, and sets out the background, rationale, and theoretical frameworks for this study. This work intends to contribute insight for Higher Education institutions aiming for optimal adoption of IM for inter-staff and student-staff communication.

Keywords: Instant Messaging, Academic Workload, Technostress, Digitalised Workplace, GenAI, LLMs, Staff Well-Being

1.0 Introduction

Instant messaging (IM) tools emerged initially in the 1990s, with platforms like ICQ, AIM (AOL Instant Messenger), and Yahoo! Messenger allowing users to send text

messages and files to one another over the internet. The proliferation of smartphones in the late 2000s brought another significant shift to instant messaging. In 2015, WhatsApp became the most popular IM tool, having registered more than 900 million users (Sun, 2015), and this continued to grow to over 2 billion users in early 2020 (WhatsApp blog, 2020). Later businesses and governmental organisations started to use platforms like Slack, Microsoft Teams, Zoom and Google Chat for internal communication and collaboration. IM tools bring people from different geographical spaces closer together through quasi-synchronous communication (So, 2016) and have proved their worth in facilitating team collaboration, problem solving, coordination and efficient decision making (Hurbean et al, 2022).

While IM tools have become more widespread and accessible within Higher Education (HE) settings, along with the emergence of Generative AI (GenAI) tools such as ChatGPT which are further normalising IM in the form of chatbots, it is unclear how IM is being adopted by academics on a larger scale. While important work has been conducted since the early 2000s to identify the attitudes and engagement of learners with IM technology, there is a need to further understand the perceptions of academics who are important facilitators of effective IM practice within an educational context.

This research aims to explore the adoption of IM tools by teachers in HE institutions and the impact of IM tools on the stress levels and well-being of academic staff. The authors are planning to perform initial explorative research to identify influencing factors in the context of HE. Following this, a wider survey will be used to gain a deeper understanding of the strength of each influencing factor as well as adoption levels of IM for inter-staff and student-staff communication.

To summarise, the authors specify the following research questions:

RQ1: What are the contemporary barriers, facilitators and stressors that impact the adoption of IM by academic staff within Higher Education contexts?

RQ2: What are practical solutions to achieve optimal adoption of IM in Higher Education contexts?

2.0 Related work

Studies between the early 2000s and 2015, when the use of IM was more select and smartphones were in their infancy, found that learners would feel comfortable or 'very comfortable' with text and instant messaging (Lauricella and Kay, 2013). This sense of comfort may stem from familiarity with the tools, as De Bakker and colleagues (2007) report that approximately 75% of participants in their study utilise IM tools at least once a day for five out seven days a week. Further studies found that learners used IM to coordinate work and receive answers to queries outside of timetabled sessions (Hrastinski and Aghaee, 2012), and has also provided learners an ability to communicate with academic staff, in contexts where they may have felt inhibited in large class sizes (Lents and Cifuentes, 2010).

The COVID-19 worldwide pandemic prompted a greater uptake in video conferencing software such as Zoom and Microsoft Teams, which also facilitate IM between staff and learners. A study conducted in 2020, sampling over 1700 undergraduates, found a statistically significant interaction between formal and study Academic Instant Messaging Groups (AIMGs) and academic performance, in addition to lower academic stress levels (le Roux and Perry, 2022).

A plethora of research exists that investigates the impact of IM on student-teacher collaboration and learning enhancement (De Bakker et al., 2007; Lauricella and Kay, 2013; Tang and Hew, 2019) but while examples of good practice are evident, it is unclear whether IM is being used intentionally and sustainably on a larger scale.

Like any new technology, the adoption of IM at work can introduce both new opportunities and new threats to employees' work performance and well-being (Hurbean et al, 2022). IM can be a significant cause of distraction that moves attention away from main working goals (Spira and Feintuch, 2005). This flexibility and versatility of IM tools can contribute to employees' technostress.

As of 2024, individuals can interact with GenAI chatbots based on large language models (LLMs) such as ChatGPT, Google Bard, Claude AI, and Microsoft Copilot. For some, this may be normalising the use of IM, even easing academic workload through efficiency gains. For others, it may be a significant stressor and even pose a perceived existential threat (Concannon et al., 2023).

3.0 Theoretical Background

Complexity of technology usage behaviour can be explored from various perspectives and there are numerous theories and frameworks that focus on various aspects of this behaviour. Some models take a usability perspective, others also take technical characteristics into consideration, yet others articulate the social aspect of technology usage and adoption. Two of the most widely used frameworks in the context of technology adoption and usability research are the Information Systems Success Model and Technology Acceptance Model.

The Information Systems Success Model is a widely recognised framework that explains the success of information systems in organisations (DeLone and McLean, 2003). It is frequently used in information systems research and evaluation since it addresses both usability and technical aspects of information systems. The model postulates that components such as system quality, information quality and service quality influence user satisfaction which in turn influences intention to use and actual use of tools and information systems, ultimately leading to benefits for the organisation.

The Technology Acceptance Model (TAM) seeks to explain and predict how users accept and adopt new technology (Davis, 1989). TAM is frequently used in the research related to information systems acceptance and technology adoption due to its transparency and adaptability.

TAM2 (Venkatesh and Davis, 2000) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, et al., 2003) can be viewed as extensions of TAM and incorporate additional factors such as voluntariness, job relevance, social influence, gender, and age. While these models have gained traction in the academic literature (Williams, et al., 2015), the original TAM is still widely used and has now been adapted for contemporary research in education related to emerging technologies such as ChatGPT (Saif, et al., 2024; Abdaljaleel, et al., 2024).

While some additional factors would likely be uncovered by using more recent models such as TAM2, TAM3, and UTAUT, there are many potential context-specific factors that could influence adoption of IM within HE which may not be uncovered by existing models. Examples may include organisational culture, student expectations, digital

poverty, safeguarding considerations, pedagogical alignment, cross-generational or cross-cultural communication styles, and technological trends such as GenAI.

For these reasons, the authors chose TAM as a theoretical framework to support the exploration of barriers and facilitators of IM adoption in academic settings.

While TAM and the Information Systems Success Model mainly address the usability aspects of information systems, the technostress model developed by Ragu-Nathan and colleagues (Ragu-Nathan et al., 2008) takes a distinct perspective on the usage of Information Technology (IT) and focuses on users' well-being and the phenomenon of technostress - stress experienced by end users of IT and its impact on their job satisfaction and commitment to the organisation. This model is less frequently used in the IT usage research, though it can provide useful and insightful perspective on the impact of IT tools, including the experience of using IM.

Other frameworks that articulate the social aspect of communication technology are related to the computer-mediated communication theory, for example Uses and Gratification theory (Weiyan, 2015), but the authors would like to investigate users' well-being along with the usability aspects of IM in Higher Education. For this reason, the TAM and Technostress models are seen as being the suitable frameworks to form a basis for the current research while acknowledging the need for a wider exploration of influencing factors specific to HE. For this reason, the authors are proposing a composite model, an initial version of which is outlined in section 4 of this paper.

3.1 Technology Acceptance Model

The Technology Acceptance Model (TAM), originally proposed by Davis (1989) and represented in Fig. 1, continues to be the prevailing measure of 'usability' with regards to new procedures and processes involving technology. TAM is a widely recognised and validated theoretical framework in the field of information systems and technology management. It aims to understand and predict users' acceptance and adoption of new technologies. It is based on motivational theories and idea that perceived ease of use (PEOU) and perceived usefulness (PU) are key determinants of an individual's willingness to accept and use technology.

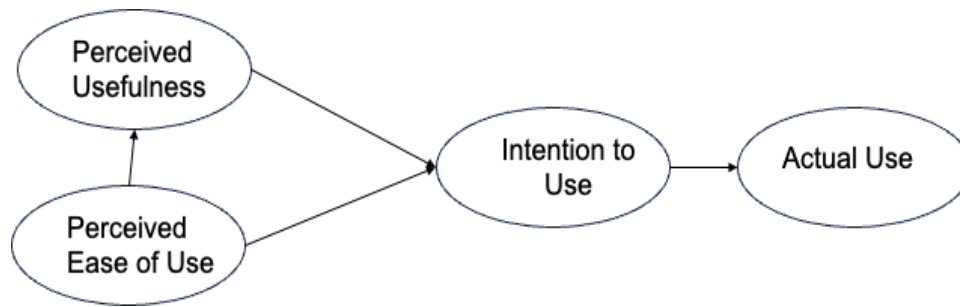


Figure 1. Technology Acceptance Model (TAM).

3.2 Technostress model

Ragu-Nathan and colleagues developed and validated a conceptual model of technostress (Ragu-Nathan et al., 2008) and is based on the transactional approach to stress that explains stress occurrence as a combination of a challenging stressful condition and the person's response to it (Cooper et al., 2001). Technostress refers to the psychological and physical stress that individuals experience as a result of use of technology (Zielonka and Rothlauf, 2021) and emerged as a concept with the increasing integration of technology into various aspects of our personal and professional lives. The technostress model proposed by Ragu-Nathan et al. (2008) provides a structured framework for understanding the causes and consequences of technostress in the workplace, as represented in Fig. 2.

Differences in age, education, experience, and familiarity with IT define the strength of technostress creators as perceived by an individual. These differences relate to individual beliefs about the usefulness and ease of use of IT. A combination of stressors and technostress inhibitors creates a certain level of Job Satisfaction, Organisational Commitment and Continuance Commitment.

It is appreciated that not all technostress is negative, and some stressors can, in fact, lead to positive outcomes such as improved efficiency and innovation. Depending on an individual's perspective, the stress associated with use of IT could be perceived as challenging in a developmental way (Eustress) or as a threat leading to detrimental outcomes (Distress) as outlined by Tarafdar, Cooper and Stich (2019).

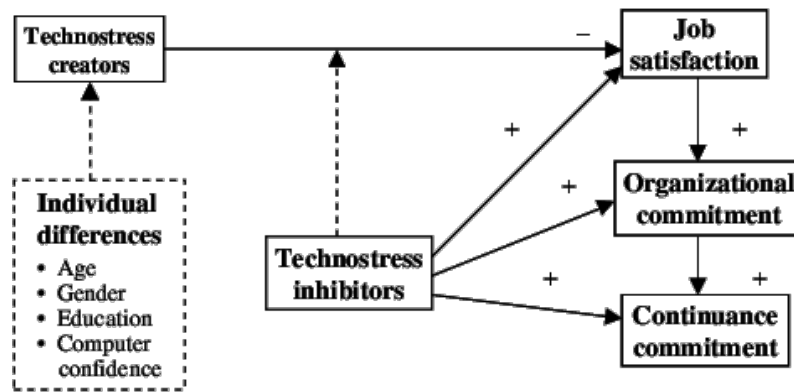


Figure 2. Conceptual Model for Understanding Technostress (Ragu-Nathan et al., 2008).

4.0 Composite Theoretical Model

An initial round of pre-survey exploratory interviews is proposed with the purpose of identifying any influencing factors in the context of HE not revealed by the application of TAM and Technostress.

Based on this initial research, the authors intend to develop and utilise a composite theoretical model to inform the design of a questionnaire to capture the following data regarding academic staff in High Education contexts:

- Current usage levels of IM.
- Stressors (potential and actual) hindering adoption of IM.
- Current perceived ease of use (PEOU) and perceived usefulness (PU) of IM.
- The impact of other influencing factors specific to the HE context.

Based on the work of Ragu-Nathan et al. (2007) the authors aim to assess the strength of a set of technostress creators, categorised as techno-overload, -invasion, -complexity, -insecurity, and -uncertainty. An adapted version of the Technology Acceptance Model questionnaire (Davis, 1989) will be used to capture perceived ease of use and the usefulness of IM. Additional questions will be included, based on other influencing factors identified during pre-survey interviews. The influence of HE-specific factors on PEOU, PU, Technostress creators, and Technostress inhibitors will subsequently be analysed.

5.0 Conclusion

This research has explored how a composite theoretical model could be used to identify and classify factors that influence the adoption of IM from an academic staff perspective, which include the technostressors associated with IM and other factors specific to Higher Education, particularly within the contemporary context of emerging GenAI and LLMs.

Interviews will be conducted to inform the development of a survey to be distributed through academic networks to attain a sample which is as representative as possible from among teaching staff within HE. These findings will further deepen our understanding of the research landscape (RQ1) before progression to the next phase of the research.

The next research step would be to propose a set of recommendations for optimal IM adoption in HE and validate these through another round of interviews or focus groups (RQ2).

References

- Abdaljaleel, M., Barakat, M., Alsanafi, M., Salim, N.A., Abazid, H., Malaeb, D., Mohammed, A.H., Hassan, B.A.R., Wayyes, A.M., Farhan, S.S. and Khatib, S.E. (2024). A multinational study on the factors influencing university students' attitudes and usage of ChatGPT. *Scientific Reports*, 14(1), p.1983.
- Concannon, F., Costello, E., Farrell, O., Farrelly, T. and Wolf, L.G. (2023). There's an AI for that: Rhetoric, reality, and reflections on EdTech in the dawn of GenAI. *Irish Journal of Technology Enhanced Learning*, 7(1).
- Cooper, C. L., Dewe, P., & O'Driscoll, M. P. (2001). Organizational stress: A review and critique of theory, research, and applications.
- Davis, F. D. (1989). *Perceived usefulness, perceived ease of use, and user acceptance of information technology*. *MIS Quarterly*, 13(3), 319–340
- DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: a ten-year update. *Journal of management information systems*, 19(4), 9-30.
- De Bakker, G., Sloep, P. and Jochems, W. (2007). Students and instant messaging: a survey of current use and demands for higher education.

- Hrastinski, S. and Aghaee, N.M. (2012). How are campus students using social media to support their studies? An explorative interview study. *Education and Information Technologies*, 17(4), pp.451-464.
- Hurbean, L., Dospinescu, O., Munteanu, V. and Danaiaata, D. (2022). *Effects of Instant Messaging Related Technostress on Work Performance and Well-Being*. *Electronics*, 11(16), 2535.
- Lauricella, S. and Kay, R. (2013). Exploring the use of text and instant messaging in higher education classrooms. *Research in Learning Technology*, 21.
- Lents, N.H. and Cifuentes, O.E. (2010). Increasing student-teacher interactions at an urban commuter campus through instant messaging and online office hours.
- le Roux, D. le Roux, D.B., Parry, D.A. (2022). An exploratory investigation of the use and effects of academic instant messaging groups among university students. *Educational Information Technology* 27, 1055–1080.
<https://doi.org/10.1007/s10639-021-10631-y>
- Ragu-Nathan, T. S., Tarafdar, M., Ragu-Nathan, B. S., & Tu, Q. (2008). *The consequences of technostress for end users in organizations: Conceptual development and empirical validation*. *Information systems research*, 19(4), 417-433.
- Saif, N., Khan, S.U., Shaheen, I., Alotaibi, A., Alnfai, M.M. and Arif, M. (2024). Chat-GPT; validating Technology Acceptance Model (TAM) in education sector via ubiquitous learning mechanism. *Computers in Human Behavior*, 154, p. 108097.
- So, S. (2016). Mobile instant messaging support for teaching and learning in higher education. *The Internet and Higher Education*, 31, pp.32-42.
- Spira, J. and Feintuch, J. (2005). *The cost of not paying attention: How interruptions impact knowledge worker productivity*. Basex Feintuch 1–21.
- Sun, L. (2015). Facebook Inc.'s WhatsApp hits 900 million users: what now. *The Motley Fool*.
- Tang, Y. and Hew, K.F. (2019). Examining the utility and usability of mobile instant messaging in a graduate-level course: A usefulness theoretical perspective. *Australasian Journal of Educational Technology*, 35(4).
- Tarafdar, M., Cooper, C.L. and Stich, J.F. (2019). The technostress trifecta-techno eustress, techno distress and design: Theoretical directions and an agenda for research. *Information Systems Journal*, 29(1), pp.6-42.
- Venkatesh, V. and Davis, F.D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management science*, 46(2), pp.186-204.
- Venkatesh, V., Morris, M.G., Davis, G.B. and Davis, F.D. (2003). User acceptance of information technology: Toward a unified view. *MIS quarterly*, pp.425-478.

- Weiyang, L. I. U. (2015). A historical overview of uses and gratifications theory. *Cross-Cultural Communication*, 11(9), 71-78.
- WhatsApp (2020). Two billion users—connecting the world privately. WhatsApp Blog.
- Williams, M.D., Rana, N.P. and Dwivedi, Y.K. (2015). The unified theory of acceptance and use of technology (UTAUT): a literature review. *Journal of enterprise information management*, 28(3), pp.443-488.
- Zielonka, J. T., & Rothlauf, F. (2021). Techno-eustress: The impact of perceived usefulness and perceived ease of use on the perception of work-related stressors.