Social Media Use in the Workspace: Applying an Extension of the Technology Acceptance Model Across Multiple Countries

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Abstract. Social media technologies and tools are emerging as important source of firm business value creation. In this study, an extended version of the technology acceptance model (TAM) that integrates perceived risk and security is used to assess the acceptance of social media within the workspace across multiple countries and to test for user's behaviors homogeneity. In addition, the study investigates the moderating effects of user computer experience on the relationship between user's attitude and intention to use social media. To test the proposed model, the study uses data gathered from the US, Australia, the UK, Canada, and India. In the data analysis process, the study uses the full data and data from each country. The results detect the existence of user's behaviors heterogeneity across the countries under study; confirm the robustness of the TAM in the context of social media within the workspace. Finally, implications for research and practice are proposed.

Keywords: Social media · Adoption and use · Intention · TAM
Perceived risk · Perceived security · Computer experience

1 Introduction

Social media technologies and tools are emerging as important source of firm business value creation. They have been considered as the driving forces behind the growth of social commerce [1]. Social media offer new ways to interact with a given firm key players [2, 3], including real-time one-to-one communication with online consumers. In addition, online consumers can now use social media to communicate in real-time with their peers before their final purchasing decisions [4]. The social media high business value has attracted firms across various sectors, as "social media positively influences most companies' revenue and sales" (p. 1) [5]. Indeed, it is estimated that about two billion people are current active users of social media. This number will reach about 2.5 billion in 2018 [5]. In addition, advertising revenues generated by social media are quite impressive. They went from about 17.85 billion U.S. dollars in 2014 to reach the notable amount of 41 billion U.S. in 2017 [6].

While the high operational and strategic value of social media has been acknowledged by prior studies [7–11], very few studies have explored key factors of social media adoption and use within workspace across many countries. Therefore, the

main objective of this study is to examine the main factors that influence social media adoption and use by organizations across multiple countries. To achieve our research objective, the study aims at examining the following research questions:

1. Is the extended TAM suitable to study social media adoption and use within organizations across multiple countries?
2. What is the moderating effect of user computer experience on the relationship between user attitude and the behavioral intention to use social media?

To address our research questions, the study draws on the emerging literature on social media, an extended version of TAM that integrates two new constructs namely: perceived risk (PR) and perceived security (PS). In addition, the study tests the moderating effect of user computer experience on the relationship between user attitude and the behavioral intention to use social media. Then, the proposed model is tested using the collected data from each country and the pooled or global data. After the introduction, we first present our theoretical development. Then, in the next section, our research methodology is discussed. The subsequent section presents and discusses our results. Then, the discussion, implications, limitations and future research perspectives section is presented. In the final section, we present the conclusion of the study.

2   Theoretical Development

Our proposed research model (Fig. 1) was developed based on the emerging literature on social media, an extended version of TAM that integrates two new constructs namely: perceived risk and perceived security.
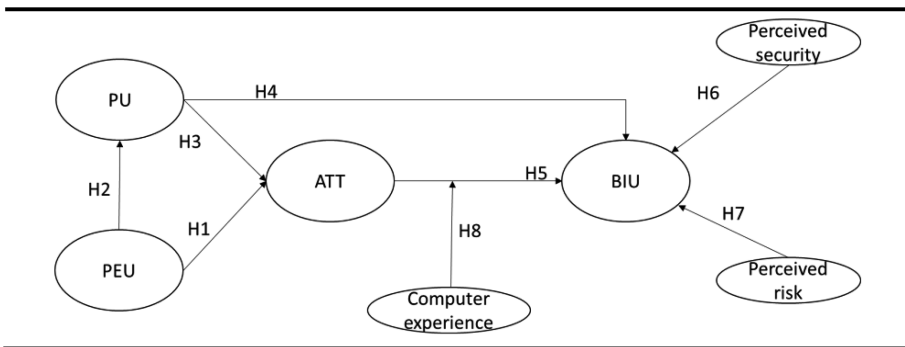

Fig. 1. Proposed research model

The TAM is probably the most used research framework in the information systems field [12–15]. The model was first developed by Davis [12] to explore the reasons behind the acceptance or the rejection of information technology (IT) by potential users using a small set of constructs. TAM argues that perceived usefulness (PU) or the "degree to which a person believes that using a particular system would enhance his or

her job performance" (p. 320) [12] and perceived ease of use (PEU), which is defined as "the degree to which a person believes that using a particular system would be free of effort" (p. 320) [12] are the two particular beliefs that are of "primary relevance for computer acceptance behaviors" (p. 985) [15]. The model also identifies a positive relationship between PEU and PU. Furthermore, TAM posits that IT usage is determined by the user's behavioral intention, which in turn is jointly explained by the user's attitude toward (ATT) using the computer system and PU.

Drawing on the above discussion, we propose the following hypotheses in the context of social media use within organizations (Fig. 1):

H1: PEU has a significant positive effect on ATT.
H2: PEU has a significant positive effect on PU.
H3: PU has a significant positive effect on ATT.
H4: PU has a significant positive effect on the user's behavioral intention to use (BIU).
H5: ATT has a significant positive effect on BIU.

In addition to these five hypotheses that are the founding blocks of the TAM, we argue that in the context of social media PS or "the subjective probability with which users believe their sensitive information (business or private) will not be viewed, stored, and manipulated during work sessions by unauthorized parties in a manner consistent with their confident expectations" (p. 165) [16] and PR or "the extent to which a functional or psychosocial risk a user feels he/she is taking when using a product" (p. 165) [16] are key determinants of the behavioral intention to adopt social media within organizations. Indeed, in the current digital world where a massive amount of data is generated and use by users as well as exchanged between various firm stakeholders, ensuring that private users information is stored safely is an important step toward facilitating the acceptance of social media within organization.

Therefore, we propose the following hypotheses (Fig. 1):

H6: PS has a significant positive effect on BIU.
H7: PR has a significant negative effect on BIU.

Computer experience which is defined as "a level in which someone have ever used a technology to ease his/her work" (p. 27) [17], has been viewed as an important adoption factor in the diffusion theory [17]. It has been used as a moderator for the relationships between effort expectancy and behavioral intention and social influence and behavioral intention in the context of consumer acceptance of personal information and communication technology services [18]. Drawing on this discussion, we hypothesize the following:

H8: Computer experience moderates the relationship between user's attitude and its behavioral intention to use social media within workspace.

3   Methodology

Our study uses a web based-questionnaire to collect data from 2,556 social media users in their workplaces in various countries including: the US, Australia, the UK, Canada, and India. The data collection was realized in January 2013 by a market research firm called *Survey Sampling International (SSI)*. Our study uses items derived from the existing literatures. They were adapted to the social media adoption and use in firms context [12, 16], and measured with a seven-point Likert scale.

For the data analysis, a partial least squares (PLS) structural equation modeling (SEM) called SmartPLS tool version 3.0 was used to assess the measurement and structural model [19]. The study assesses the reliability and validity of all the items. More precisely, the study looks at the item loadings values, the composite reliability value, and the average variance extracted (AVE). To meet the minimum requirement, these values should be respectively higher than 0.70, 0.70 and 0.50 [20]. Finally, the study uses the two stage approach proposed by [21] and embedded into SmartPLS 3.0.

4   Results and Discussion

Table 1 presents the outer loadings for full data and each country. As we can see, they all have a value higher than 0.7. Table 2 presents all Cronbach's alpha values, composite reliability and AVE values of our constructs.

As showed in Table 2, all displayed values are meeting the suggested acceptable threshold values of respectively, 0.7, 0.7 and 0.5 [20, 22], and thus justifying the use of all constructs included in our research model.

The study also tested for discriminant validity [23–25] by looking at all correlation matrixes with the square root of the AVEs in the diagonals. All the values were exceeding the inter-correlations of the construct with the other constructs in the model, and thus ensuring the discriminant validity.

Table 3 displays the results of our structural models. From the table, we can observe that all the standardized path coefficient of the core relationships in the TAM model in the context of social media adoption and use within organizations are significant at a level of 0.001. Therefore, all hypotheses derived from TAM (H1, H2, H3, H4, and H5) are supported for the full data, Australia, Canada, the UK, the USA and India. The standardized path coefficient related to the relationship between PS and BIU is only significant (at the level of 0.05) for the full data and for the UK (at the level of 0.1), and thus supporting our hypothesis H6 only for the full data and for the UK. This hypothesis is not supported for Australia, Canada, the USA and India, and therefore suggesting differences in adoption behavior across the countries under study when looking at the impact of perceived security on the behavioral intention to use social media within organizations.

Table 1. Outer loadings

	Full data	Australia (C1)	Canada (C2)	UK (C3)	USA (C4)	India (C5)
ATT1	0.970	0.974	0.965	0.976	0.971	0.929
ATT2	0.956	0.957	0.945	0.966	0.961	0.912
ATT3	0.964	0.966	0.959	0.962	0.970	0.939
ATT4	0.954	0.953	0.936	0.962	0.958	0.934
BIU1	0.847	0.832	0.813	0.859	0.827	0.819
BIU2	0.917	0.919	0.930	0.927	0.911	0.867
BIU3	0.845	0.820	0.812	0.835	0.829	0.863
BIU4	0.912	0.915	0.911	0.926	0.907	0.876
PEU1	0.933	0.937	0.939	0.934	0.923	0.913
PEU2	0.841	0.828	0.815	0.864	0.852	0.828
PEU3	0.940	0.946	0.931	0.948	0.934	0.929
PR1	0.995	0.986	0.961	0.979	0.995	0.961
PR2	0.751	0.750	0.831	0.791	0.718	0.958
PS1	0.972	0.977	0.954	0.966	0.977	0.967
PS2	0.973	0.976	0.962	0.968	0.977	0.966
PU1	0.767	0.754	0.735	0.760	0.770	0.760
PU2	0.921	0.918	0.884	0.913	0.930	0.904
PU3	0.929	0.923	0.901	0.926	0.934	0.902
PU4	0.938	0.940	0.919	0.941	0.935	0.907
PU5	0.929	0.930	0.906	0.923	0.930	0.904

Table 2. Cronbach's alpha values, rho and average variance extracted

	α						Rho_A						AVE					
	Full data	C1	C2	C3	C4	C5	Full data	C1	C2	C3	C4	C5	Full data	C1	C2	C3	C4	C5
ATT	0.972	0.974	0.965	0.977	0.975	0.947	0.973	0.974	0.966	0.977	0.976	0.947	0.923	0.927	0.905	0.934	0.931	0.862
BIU	0.903	0.895	0.890	0.910	0.892	0.879	0.907	0.901	0.904	0.916	0.897	0.882	0.776	0.761	0.754	0.788	0.756	0.734
PEU	0.891	0.890	0.880	0.905	0.889	0.870	0.923	0.923	0.930	0.932	0.918	0.888	0.820	0.820	0.804	0.839	0.817	0.794
PR	0.809	0.771	0.783	0.788	0.784	0.914	3.762	2.001	1.066	1.563	3.896	0.915	0.777	0.767	0.806	0.792	0.753	0.920
PS	0.942	0.952	0.911	0.930	0.952	0.929	0.942	0.952	0.916	0.930	0.952	0.929	0.945	0.954	0.918	0.935	0.954	0.934
PU	0.939	0.937	0.920	0.937	0.941	0.924	0.939	0.937	0.921	0.940	0.941	0.923	0.809	0.802	0.760	0.801	0.814	0.769

Also, we can observe a negative non-significant effect of PR on the BIU for the full data, Australia, Canada, the USA and India. Surprisingly, we found a positive non-significant effect of PR on the BIU for the UK data, and thus reinforcing the existence of differences in adoption behavior across the countries under study for social media adoption and use within organizations. H7 is not supported for the full data and none of the country under study.

When looking at the moderating variable, we can see that computer experience has a direct positive significant effect only on the BIU for the full data and data collected from Canada. However, the standardized path coefficient related to the moderating effects is only significant for the full data (at the level of 0.1) and data collected from

Table 3. Results of the structural model for the full data and each country

	Full data	C1	C2	C3	C4
	Beta(sig.)				
ATT -> BIU	0.563****	0.584****	0.597****	0.600****	0.528****
CEXP -> BIU	0.017*	0.012	0.042**	0.030	0.016
Moderation	0.013*	−0.002	0.027	0.033**	0.000
PEU -> ATT	0.397****	0.455****	0.385****	0.454****	0.350****
PEU -> PU	0.573****	0.537****	0.514****	0.512****	0.577****
PR -> BIU	−0.009	−0.003	−0.039	0.025	−0.010
PS -> BIU	0.033**	0.046	0.022	0.059*	0.001
PU -> ATT	0.531****	0.493****	0.520****	0.476****	0.566****
PU -> BIU	0.352****	0.323****	0.309****	0.309****	0.423****

****$P < 0.001$; ***$P < 0.01$; **$P < 0.05$; *$P < 0.1$

the UK (at the level of 0.05), and therefore, we must accept H8 only for the full data and for the UK, and reject H8 for Australia, Canada, the USA and India.

5   Conclusion and Future Research Directions

This study starts with the aim of using an extended version of the TAM that integrates perceived risk and security to assess the acceptance of social media within the workspace across multiple countries and to test for user's behaviors homogeneity. Also, the study investigates the moderating effects of user computer experience on the relationship between user's attitude and intention to use social media. To test the proposed model, the study uses data collected from the US, Australia, the UK, Canada, and India. In the data analysis process, the study uses the full data and data from each country.

The study found that all core relationships in the TAM model in the context of social media adoption and use within organizations are significant at a level of 0.001 for the full data, and data collected from each country under study (Australia, Canada, the UK, the USA and India), and thus confirming the robustness of the TAM. The study found the relationship between PS and BIU is only significant for the full data and for the UK. Similarly, the study found that there is a negative non-significant effect of PR on the BIU for the full data, Australia, Canada, the USA and India, with however a positive non-significant effect of PR on the BIU for the UK data, and thus confirming the existence of differences in adoption behavior across the countries under study for social media adoption and use within organizations. Future studies may focus on using more advanced techniques to explore the presence of unobserved heterogeneity [26].

Finally, the study found that computer experience has a direct positive significant effect only on the BIU for the full data and data collected from Canada. However, the standardized path coefficient related to the moderating effects is only significant for the full data and data collected from the UK, and therefore reinforcing the existence in adoption behavior across the countries under study for social media adoption and use within organizations. Looking at the impact of these differences on the organizational performance should be included into future research directions.

References

1. Stephen, A.T., Toubia, O.: Deriving value from social commerce networks. J. Mark. Res. **47**(2), 215–222 (2010)
2. Culnan, M.J., McHugh, P.J., Zubillaga, J.I.: How large U.S. companies can use twitter and other social media to gain business value. MIS Q. Executive **9**(4), 243–259 (2010)
3. Burke, W.Q., Fields, D.A., Kafai, Y.B.: Entering the clubhouse: case studies of young programmers joining the online scratch communities. J. Organ. End User Comput. **22**(2), 21 (2010)
4. IBM: Social Commerce Defined, IBM, Editor. IBM (2009)
5. Herhold, K.: How Businesses Use Social Media: 2017 Survey (2017). https://clutch.co/agencies/social-media-marketing/resources/social-media-survey-2017. Cited 16 Nov 2017
6. STATISTA: Social network advertising revenue from 2014 to 2017 (in billion U.S. dollars) (2017). https://www.statista.com/statistics/271406/advertising-revenue-of-social-networks-worldwide/. Cited 15 Nov 2017
7. Fosso Wamba, S., et al.: Role of intrinsic and extrinsic factors in user social media acceptance within workspace: assessing unobserved heterogeneity. Int. J. Inf. Manage. **37**(2), 1–13 (2017)
8. Fosso Wamba, S., Carter, L.: Social media tools adoption and use by SMES: an empirical study. J. Organ. End User Comput. **26**(2), 1–17 (2014)
9. Fosso Wamba, S., Edwards, A.J.: Factors related to social media adoption and use for emergency services operations: the case of the NSW SES. In: 20th Americas Conference on Information Systems, Savannah, Georgia, USA (2014)
10. Meire, M., Ballings, M., Van den Poel, D.: The added value of social media data in B2B customer acquisition systems: A real-life experiment. Decis. Support Syst. **104**(Supplement C), 26–37 (2017)
11. Dong, J.Q., Wu, W.: Business value of social media technologies: evidence from online user innovation communities. J. Strateg. Inf. Syst. **24**(2), 113–127 (2015)
12. Davis, F.D.: Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Q. **13**(3), 319–340 (1989)
13. Venkatesh, V., Davis, F.D.: A theoretical extension of the technology acceptance model: four longitudinal field studies. Manage. Sci. **46**(2), 186–204 (2000)
14. Venkatesh, V., et al.: User acceptance of information technology: toward a unified view. MIS Q. **27**(3), 425–478 (2003)
15. Davis, F.D., Bagozzi, R.P., Warshaw, P.R.: User acceptance of computer technology: a comparison of two theoretical models. Manage. Sci. **35**(8), 982–1003 (1989)
16. Trinchera, L.: Unobserved Heterogeneity in Structural Equation Models: a new approach to latent class detection in PLS Path Modeling, p. 338. Universita degli Studi di Napoli Federico II, Napoli (2007)
17. Teuku, N.: The effects of experience, complexity, and computer self efficacy factors towards the use of human resources information system application. J. Res. Bus. Manage. **2**(11), 26–33 (2014)
18. Thong, J.Y.L., et al.: Consumer acceptance of personal information and communication technology services. IEEE Trans. Eng. Manage. **58**(4), 613–625 (2011)
19. Ringle, C.M., Wende, S., Becker, J.-M.: SmartPLS 3 (2014). www.smartpls.com
20. Leung, J., Cheung, W., Chu, S.-C.: Aligning RFID applications with supply chain strategies. Inf. Manage. **51**(2), 260–269 (2014)

21. Fosso Wamba, S., Ngai, E.W.T.: Importance of issues related to RFID-enabled healthcare transformation projects: results from a delphi study. Prod. Plann. Control **26**(1), 19–33 (2015)
22. Guadagnoli, E., Velicer, W.: Relation of sample size to the stability of component patterns. Psychol. Bull. **103**, 265–275 (1988)
23. Chin, W.W.: The partial least squares approach for structural equation modeling (1998)
24. Chin, W.W.: How to write up and report PLS analyses. In: Handbook of Partial Least Squares, pp. 655–690 (2010)
25. Fornell, C., Larcker, D.F.: Evaluating structural equation models with unobservable variables and measurement error. J. Mark. Res. **18**(1), 39–50 (1981)
26. Becker, J.-M., et al.: Discovering unobserved heterogeneity in structural equation models to avert validity threats. MIS Q. **37**(3), 665–694 (2013)