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The role of education in social media adoption of small and medium livestock-based food enterprises

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Abstract. Technology Acceptance Model (TAM) is commonly applied to analyse contributions of determinant variables on the adoption of communications technology. However, identifying external variables that affect technology adoption need to explore. This research is aimed to identify the role of education variable in the technology adoption. The study was conducted by survey design. One hundred respondents were determined by judgmental sampling method with criterion that respondents are owners or manager of small medium enterprises that use livestock-based product such as meat, eggs and milk in Bantul Regency, Special Province of Yogyakarta. The research showed that Perceived Ease of Use affected Perceived Usefulness ($p \leq 0.001$), and both of those variables were critical factors for Attitude Toward Social Media Use ($p \leq 0.001$). The study revealed that Intention to Adopt Social Media is affected by Attitude Toward Social Media Use and Perceived Usefulness ($p \leq 0.001$). Then, the test found that education moderates relationships between Attitude Toward Social Media Use and more influential users on those with lower education backgrounds ($p \leq 0.05$). Even so, education did not moderate relationships between Perceived Usefulness and Intention to Adopt Social Media. In short, the proposed model was able slightly higher in explaining compare to the original TAM.

1. Introduction

Small and medium enterprises (SMEs) hold large roles within national economies, for one by providing 60-70% employment [1] and even larger in Indonesia, more than 90% [2]. SMEs contribute to the economic activities in Indonesia [3]. For example, in 2012, with the total number SMEs reached 56,569,560 units which is about 99.99% of the total populations of business, SMEs were able to provide 59.08% gross domestic income with annual growth rate of 6.40% [4]. Similar to the data in country level, SMEs are the most numerous business type in Yogyakarta Special Province, that more than 90% of the total business [2]. Bantul is one of five regency in Yogyakarta Special Province that experience a shifting from primary sector such as agriculture production to tertiary sector such as hotel and restaurant industry. The average growth of tertiary sector was 11.40% during 2009-2013 and it contribute 17.40% of GDP in 2013 [5]. Then, 14.50% of SMEs are enterprises that use livestock-based product such as meat, egg and milk as the main food base. Bantul government support and facilitate farmers to diversify product of animal industry to increase local food consumption and reduce imported food [6]. Government support open the farmers opportunity to be more competitive by adding value of the commodity product. However, SMEs in Indonesia are still limited in accessing impactful technologies which resulted in considerably minimum market share [7]. Promotion is a part of



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1 important marketing strategy that supports the successes of SMEs in dealing with said issue. One alternative tool for SMEs is social media as a functionally beneficial platform to display and endorse identities, building presence, sharing and relaying information, conversing, forming groups, analysing brand reputations, and managing relationships with customers [8]. Even then, all those benefits can be achieved if the tool is implemented efficiently. The key towards the success of implementing social media for SMEs as a promotional media depends on their willingness to adopt the technology. Based on that, a study is needed to unravel critical factors that affects the adoption of social media technology by SMEs. The research is applying Technology Acceptance Model (TAM) based on [9] to explain acceptance of technology. Empirical tests showed that TAM possesses explanatory power to predict adoption and application of technology, but the dynamic changes of information technology made it important to update and extent the model.

Modifications of TAM applied in research topic include the context of demographic variables such as age and gender [10]. Moreover, expansion of TAM was conducted as well to test the model on higher education level context [11,12], which indicated the existence of the roles of other variables external of TAM in its original format. Related to this, the research is conducted with the purpose to study and evaluate the roles of education variable as predictor as well as moderation variable within TAM relevant with the investigation of intentions in adopting social media for uses by SMEs. Moreover, education can also determine technology acceptance behaviour [13]. Higher education level allows individuals to be open for innovation and technology as well as greater capacity to learn them, in contrast to individuals with lesser education levels. Therefore, the research is extended to investigate the role of education in affecting the dependent variable of TAM model that is Intention to Adopt Social Media and as moderating variable in the relationships of Perceived Usefulness and Intention to Adopt Social Media and also between Attitude toward Social Media and Intention to Adopt Social Media.

2. Material and methods

2.1. Material

Materials used in this research include questionnaire sheets used to record research variables of Perceived Usefulness (PU), Perceived Ease of Use (PEU), Attitude toward Social Media (ASM), and Intention to Adopt Social Media (IASM). The questionnaire used applies Likert scale from score 1 to 5. Then, education variable was measured by the length time formal study was taken by respondents in years.

2.2. Methods

The study is designed as a survey research which collects data through face-to-face interviews and self-administered questionnaire filled by the respondents. The respondents involved were owners or any other members held responsible in the operational of small and medium livestock-based food enterprises that were located in Bantul Regency, Special Province of Yogyakarta. Validity, reliability, and hypothesis testing were conducted with Partial Least Square (PLS) analysis.

3. Result

3.1. Characteristics of respondents

The respondents involved in this research consisted of 100 manager/owner of small and medium livestock-based food enterprises with 47% of them already familiar with social media to aid their promotion within the next two years and the rest 53% of them similarly are familiar with the technology but have passed the 2-year mark. However, 78% of the livestock-based food SMEs have only used social media for promotion within two years or less, 15% have implemented the technology in between 3 to 4 years, and only 8% of them have been using social media for over 4 years with similar purposes. Majority of the respondents at 60% learned social media on their own while 31%

learned through acquaintances and 9% learned their uses from printed media, seminars, or other sources. On the other hand, 82% of the SMEs on average accessed social media for 4 hours or less daily with Instagram being the most favoured platform, which is 47% of all recorded platforms, followed by Facebook at 30% and WhatsApp at 20%, while the rest used either Line or Twitter.

3.2. Measurement model

Evaluation is conducted to verify indicators and latent variables used within the hypothesis testing with composite reliability and Cronbach Alpha criteria to test reliability. Table 1 showed that composite reliability scores obtained was 0.860, 0.886, 0.867 and 0.877 for PU, PEU, ASM and IASM constructs and Cronbach Alpha scores obtained was 0.804, 0.839, 0.799 dan 0.814 for the same constructs. All said scores as a whole has composite reliability and Cronbach Alpha scores of ≥ 0.7 [14] and it can be determined that the construct applied in this research is reliable or all indicators involved can measure constructs properly.

On the other hand, Table 1 showed the scores of AVE constructs PU, PEU, ASM dan IASM at 0.555, 0.609, 0.621 dan 0.642, respectively. All these scores resulted in $AVE \geq 0.5$, which means that all research constructs involved fulfilled convergent validity criteria requirements [14]. The test for discriminant validity showed consistent result. Moreover, correlation values between every indicator within the same construct measured is higher than the correlation value for the same indicators between distinct constructs, showing that the discriminant validity criteria is fulfilled.

Table 1. Composite reliability, Cronbach Alpha, average variance extracted and R-square

Construct	Composite Reliability	Cronbachs Alpha	AVE	R Square
Perceived Ease of Use (PEU)	0.886114	0.838944	0.609428	
Perceived Usefulness (PU)	0.859804	0.804307	0.555310	0.167571
Attitude Toward Social Media (ASM)	0.867472	0.798898	0.620963	0.418297
Intention to Adopt Social Media (IASM)	0.877514	0.813954	0.642104	0.520969

3.3. Structural model

Table 2 showed that both PU and PEU significantly affected ASM, as well as ASM having similar effects on IASM. These results indicated that benefits and ease-of-use of social media experienced by players of SMEs help them develop positive attitude on social media. Effects of variable previously unsupported on the original TAM was the influences of PU on IASM, thus it can be said that even if the benefits of social media can be experienced to greater extent by their users, it cannot fully develop their intents to use the technology directly. The situation is possibly caused by the perceived use of social media merely as platform for personal uses and not businesses. The data showed that 44% respondents allocated 2-4 hours daily and 49% more than 4 hours to access social media only for personal interests. In contrast, majority of the respondents spent only relatively minimum durations daily to access social media for business purposes such as promoting businesses, with 44% spent less than 1 hour and 38% between 2-4 hours daily.

Intervention test for education variable in this model showed that education did not directly affect IASM and do not moderate relationships between PU and IASM. However, education variable moderated relationships between ASM and IASM. Coefficient for moderating variable for education is -1.626, showing that the effects of attitude towards social media on the intents to adopt the technology is greater on respondents exposed to lesser education. It is possible that on such respondents, decision-making processes experienced is simpler without convoluted thoughts or considerations. Therefore, positive attitude on a technology will provide greater reasoning to develop intents to adopt social media technology compared with respondents exposed to greater extent of education. The result showed that proposed model was able to explain 52.5% of its variance that was slightly higher than

explained by the original TAM that was 52.1%. It can be said that the intervention of education variable increase explanatory power of the model.

Table 2. Total effects results of hypothesis testing

Path	Original Sample	Sample Mean	Standard Deviation	Standard Error	t statistics
ASM -> IASM	1.346861	1.160550	0.349699	0.349699	3.851491*
ASM * EDU -> IASM	-1.625538	-1.224066	0.672276	0.672276	2.417962*
EDU -> IASM	0.374285	0.131244	0.787314	0.787314	0.475395
PEU -> ASM	0.565876	0.579291	0.069132	0.069132	8.185497*
PEU -> IASM	0.643994	0.564429	0.222696	0.222696	2.891809*
PE -> PU	0.409266	0.423962	0.084930	0.084930	4.818850*
PU -> ASM	0.343392	0.347005	0.079271	0.079271	4.331860*
PU -> IASM	0.173782	0.157722	0.296025	0.296025	0.587052
PU * EDU -> IASM	1.255240	1.129611	0.780965	0.780965	1.607294

Note: * $P < 0.05$

The results lead to the importance for government bodies to implement and provide well-constructed extension models with adequate infrastructures to inform, motivate, and aid users to positively perceive technology and implement it to maximum extent [9], in this case, the application of social media for SMEs accordingly to each groups exposed to different levels of education. Extension program is needed to narrowly specific on social media to aid SMEs simplifying the complexities of the social media phenomenon they are facing [15]. Therefore management guidance is a critical strategy in increasing capacity for SMEs in facing and handling competitions.

4. Conclusion

The research resulted in findings in which concludes that benefits and ease-of-use of social media technology influences on the attitudes of livestock-based food SMEs towards social media. Moreover, attitude is an important predictor which directly affects the development of intents to adopt social media as a tool to aid business promotions. On the other hand, education variable holds a role in strengthening relationships between attitude and intents to adopt technology within livestock-based food SMEs group with lesser education levels.

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