Organizational Characteristics Influencing AI Adoption In Thai Smes:
The Mediating Role Of Marketing Mix In AI Adoption

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ABSTRACT

Organizational context refers to the internal characteristics of the organization such as management, size of company and so forth. The readiness of organization is crucial for the adoption of new technology. In particular, the adoption of artificial intelligence (AI) which has the potential to transform the business. However, not many empirical works have explored the adoption of AI in small and medium enterprises (SMEs) in Thailand. The present study explored the influence of organizational context in the adoption of AI in Thai SMEs and Bangkok Metropolitan Area in particular where maximum businesses are concentrated. In this study, the data was collected from 320 respondents employed in different Thai service sector SMEs. To facilitate this study, a structure with three variables, namely dependent (preparedness of SME), independent (organizational context) and mediating variable (marketing mix) was developed. PLS-SEM modelling was utilized to explain the proposed hypothesis. It was revealed that organisational context, in terms of adoption at leadership and individual level and openness of SME was effective in the adoption of AI in SME. Further, the mediating role of marketing mix indicates that use of AI-tools in the marketing strategy will further support the adoption of AI. The study implies that the probability of adoption of AI at organisational level in SMEs will be benefitted by a positive attitude towards the technology adoption.

Keywords: Artificial intelligence, Marketing Mix, Organizational context, SMEs, Thailand

INTRODUCTION

Artificial intelligence, synonym with machine intelligence, is a disruptive emerging technology with the potential to transform the business in terms of new production, novel business practices and marketing strategies, automating tasks, competitive edge, improved customer deliverance and so forth (Sandkuhl, 2019). Different AI technologies like machine learning (ML), natural language processing (NLP), deep learning (DL) and artificial neural networks (ANN) enables speedy processing of large data in a short time and at a lesser cost. By virtue of this, AI technology has found wide applications in different business industries including food business, E-commerce, autonomous vehicles, medical field, etc. (Chopra, 2019). Major enterprises/organizations such as Facebook, IBM, Netflix, Microsoft, Uber, Google, etc. are using AI to improve their production and operation activities worldwide (Kumar & Kalse, 2021). Overall in every discipline, AI has transformed business activities, the interaction between the company and their customer base has become more enterprising and engaging. Other AI-supported activities have been launch of new products, talent acquisition, reduced power costs, improved logistics and sourcing systems. Though well utilized by

big companies, the use of AI by small businesses such as SMEs is still in its nascent stage.

REVIEW OF LITERATURE

With the potential to transform the business, AI is paving its way to SMEs at a slower pace. Using qualitative analysis Nugroho et al. (2017) reported pressure from the customer and ease of use as the motivating factor in AI adoption by SMEs in Yogyakarta, Indonesia. However, there are barriers in the adoption of AI at multiple levels. Aarstad and Saidl (2019) listed about 20 significant barriers from the organizational, technological and environmental context in the adoption of AI by Nordic SMEs. According to Watney and Auer (2021), integration of AI in SMEs demands large financial investment in IT systems as well as hiring of technical talent which can be a costly affair for small businesses. Nevertheless, there are multiple advantages of AI in SMEs. AI tools can aid in competitive analysis to identify the strength and weakness of the competitors, aid in managing marketing, build customer relationship management and sales discussions with consumers. Especially in manufacturing sector SMEs, the use of AI has boosted productivity. In a review of 37 publications with a main focus on manufacturing SMEs, it was observed that AI and internet of things (IoT) supported analytic capabilities like descriptive, diagnostic, predictive and prescriptive analytics (Hansen & Bøgh, 2021). In literature there was limited empirical research on the knowledge of key drivers of AI adoption in SMEs.

SMEs in Thailand

In developing countries like Thailand, SMEs are the major contributors of economic development. In 2002, the Department of Industrial Promotion (DIP), under Thailand's Ministry of Industry (MoI) categorized three types of SMEs, namely production sector SME, service sector SME and trading sector SME. As of 2010, the Thai official government reported nearly 2.82 million registered SMEs with the Ministry of Commerce which increased to 3.01 million by the year 2016 (Chalita, 2014). As per data from the Office of Small and Medium-sized Enterprise Promotion there were about 818,182 SMEs in the Bangkok region alone. In Thailand SMEs are defined based on number of employees, enterprise with <50 employees and total fixed asset excluding land worth ≤50 million Thai Baht (THB) is referred to small-size enterprise, while medium size industry have <200 employees and assets worth ≤ to 50 million THB (Chalita, 2014). As of 2014, nearly 99.28% of Thai service sector was constituted by 1,036,598 SMEs and employed a maximum number of labor force corresponding to 4,701,144 employees or 80.53% of the country's employment. In 2016, the number of SMEs in the service sector increased to 1,189,373 SMEs indicating a constant rise in the number of SMEs and their contribution to the Thai economy. Nevertheless, the improvement in adoption of technology by SME was inadequate likely due to the limitation at financial and human resource level. A barrier to adoption of technology by SME was found at organizational, environmental, technological and individual level (Antlová, 2009). In a qualitative analysis involving 30 entrepreneurs of SMEs from Thailand, participants disclosed lack of public policy and government support, financial constraints, poor capital knowledge, reduced skilled labors and poor marketing management as the possible threat for the sustenance of SMEs (Sakolnakorn, 2010). In the same line, Sriphaiboon and Somjai

(2019) reported that besides lacking financial support the entrepreneurs of Thai SMEs lacked systematic knowledge and information on technological innovations. Further, they lacked training in accordance with the requirements of SMEs. Overall, a lack of research on the adoption of AI in Thai's SMEs, in particular from Bangkok province, was noted (Kawtrakul & Praneetpolgrang, 2014).

It is gathered from the literature that AI can benefit the organization manifold. In this context, it can be inferred that SMEs can also gain from the AI by using their general AI tools as a service platform. However, SMEs have several limitations like poor financial resources, lack of skilled workers, hesitation to adopt advanced technology, government policies, etc. Hence it is essential to explore the influence of factors from the context of organization, technology and environment in the adoption of AI by SMEs. The focus of the present research was to identify the factors that influences the preparedness of the Thai service sector SMEs to adopt AI technologies

RESEARCH MODEL AND HYPOTHESIS DEVELOPMENT

For this research technology-organization-environment (TOE) framework was adopted to understand the preparedness of Thai SMEs in the adoption of AI. The three key elements of TOE, namely, technological context, organization context and environmental context gives an insight to the influence of these contexts in the process of innovation, adoption and implementation of technology on an organization level (Baker, 2012). TOE framework alone or in integration with other theories like diffusion of innovation theory (DOI) and Institutional Theory (INT) has been used in many empirical works related

to adoption of technology, namely, ICT in multiple discipline including SMEs (Alsheibani et al., 2018; Truvé et al., 2019; Sastararuji et al., 2021). However, studies related to AI adoption by SME using the TOE framework were found to be limited in literature. This paper, in particular, is focused on the influence of the organizational context of SME in the adoption of AI. To further explore the importance of marketing strategies, another component, namely, marketing mix was integrated into this framework.

Organizational Context

The organizational context refers to the characteristics of an organization including number of employees, ownership, skilled personnel, competitiveness, revenue, slack resources, etc. It is postulated that presence of cross-functional teams, link between the departments, fluidity in employee's responsibilities and lateral communication promotes innovation. Besides, centralized decision-making, presence of skilled executives, leadership quality at top management level welcomes and supports the innovation. Empirical studies have emphasized multiple organizational factors like top management support, strategic planning, organizational readiness, CEO's as well as employees knowledge and innovativeness, technical competence and so forth on the successful adoption of technology by any firm (Baker, 2012).

In the context of AI, in particular the management practices and learning of AI characteristics is emphasised for the successful implementation of AI (Engel et al., 2021). Fredriksson (2018) commented that the organization's proactive and adaptive behaviour towards the concept of AI facilitated the AI integration process. Paul et al. (2020) noted that AI dimension like AI implementation and routinization

intention facilitates AI adoption in Supply Chain Risk Management (SCRM). With respect to SME, an early study on SME entrepreneurship indicated that resources and competitive strategy of the personnel are more crucial for the survival of SMEs. The adoption of new technology is influenced by the innovation, risk-taking and proactive behaviour of SME entrepreneurs (Entrialgo et al., 2001). It was noted that the functional organizational structure with lateral cooperation like cross functional team and problem solving teams was essential for gaining competitive edge in Croatian SMEs (Galetić et al., 2011). Thus, it can be postulated that AI adoption by SME can depend on the organization characteristics of SME. Therefore the following hypothesis was proposed

H1: There is a significant impact of Organizational context on the preparedness of the SMEs.

Marketing Mix

Marketing mix constitutes 4Ps, namely, products, price, promotion and place based on which the marketers configure the offerings to suit customers' needs (Singh, 2012). Londhe (2014) proposed 4Vs marketing mix model for the modern business which emphasizes valued customers, value to the customer, value to the society and value to the marketer. According to this, besides catering to the customer needs, for the marketer, the tangible and intangible benefits associated with the products and services help to create a brand image/value which is essential for survival in the competitive world. SMEs managers from Bolgatanga Municipality, Ghana felt that adoption of marketing mix is limited due to lack of marketing knowledge and their costly affair. Further, an already well-established customer base can limit the use of marketing mix. The study has an implication for managers to establish the

marketing mix not for just short-term goals like improved sales but for long-term goals to develop the enterprise further and create an image of the company (Caesar et al., 2017). On the contrary, Wieland (2018) showed that a structured marketing-mix management involves establishment of clear measurable objectives and standardization of policy on price and product attributes, features and their launch. The interdependency of these variables allowed German-based B2B SMEs to introduce new products and penetrate into new markets with higher efficiency and lower costs.

In the context of AI application in marketing, AI applications like voice processing, text processing, image recognition and processing, autonomous vehicles and robots can impact all 4Ps of marketing mix such as hyper personalization of product, price management suiting customer demand, promoting products using personalized communication and convenient shopping and so forth. Besides consumer value delivery, marketing management is saved from time-consuming activities and creates a new marketing ecosystem which supports creative activities, innovation and inclusion of new competencies (Jarek & Mazurek, 2019). Further, Huang and Rust (2021) proposed three-stage strategic framework involving mechanical AI (standardization), thinking AI (personalization) and feeling AI (renationalization) to influence not only the 4Ps but 4Cs (customer, cost, communication and convenience) of marketing mix and to create a balance between the marketer and customer. From the literature it can be gathered that in large businesses like McDonalds, Amazon, etc. the application of AI in marketing mix has benefited the company to enter and operate in the competitive market and it is continuously progressing. Thus, AI in the marketing mix of SME can also be integrated for the

potential benefit of AI. Thus, the present paper presents the following hypothesis

H2: Marketing mix mediates the relationship between organizational context and the preparedness of SMEs for the adoption of AI.

METHODOLOGY

The study aims to explore the influence of organizational context and the mediating role of marketing mix in the preparedness of Thai SMEs in the adoption of AI. The SMEs from the Bangkok Metropolitan Area of Thailand were selected using stratified random sampling techniques. Further, the sample population of 320 respondents from selected SMEs was recruited using simple random sampling and purposive sampling technique. A structured questionnaire inclusive of demographic details and underlying items of organizational context (3 items), marketing mix (4 items) and preparedness of SME (3 items) was distributed to participants. Organizational context was assessed as leadership-level adoption, individual-level adoption and system openness; marketing mix was assessed as product, price, promotion and place, while preparedness of SME was assessed as tech readiness of SME, willingness of SME and sales of SME. The response was scored on a 5-point Likert scale ranging from '1' as strongly disagree to '5' as strongly agree. The hypothesized model was tested using partial-least-squares structural equation modelling (PLS-SEM). All statistical analysis was performed using SPSS software v24.0 and a p value with less than 0.05 was considered statistically significant.

RESULTS

Demographics

Out of 320 respondents, 59.4% (190/320) of respondents were female and the remaining was male. About 70% (226/320) of respondents were in the age range of 31-50 years and with Bachelor's (149/320; 46.6%) and Master's degree (127/320; 39.7%). In the context of occupation, the participants were mainly employed as business owner/senior executive/managing director (105/320, 32.8%) and earned an income of more than 5,000,001 Baht (50.1%).

Model Analysis

The measurement model data is summarized in Table 1. Based on criterion (t-value $\geq$ 1.96 and p-value <0.05), all the path coefficients between the latent variables are significant. Common method bias (CMB) is detected by full collinearity method, namely, the variance inflation factor (VIF). The computed VIF value of more than 5 for all latent variables is suggestive of no bias in the measurement scale.

Table 1. Measurement model

Construct	Beta coefficient	Sample Mean ($\overline{X}$)	Standard Deviation (SD.)	T Statistics	P Values	VIF Values
Marketing mix						
Product	0.881	0.882	0.016	55.419	0	2.783
Price	0.915	0.915	0.011	79.596	0	3.52
Promotion	0.904	0.904	0.013	69.651	0	3.204
Place	0.868	0.868	0.02	43.168	0	2.562
Organizational context						
Leadership level adoption	0.895	0.895	0.014	64.842	0	2.37
Individual level adoption	0.9	0.9	0.014	65.221	0	2.454
System Openness	0.852	0.852	0.019	45.601	0	1.875
Preparedness of SMEs						
Tech readiness of SME	0.895	0.896	0.013	67.833	0	2.275
Willingness of SME	0.873	0.873	0.017	50.014	0	2.123
Sales of SME	0.845	0.845	0.022	38.34	0	1.769

Evaluation of the Measurement Model

PLS-SEM analysis was used to test the hypothesis. Measurement model criteria are presented in Table 2. The reliability of scales for each construct was tested using Cronbach's alpha method. Further, composite reliability evaluated internal consistency and average variance extracted (AVE) evaluated convergent validity. The acceptable level of internal consistency was estimated using Cronbach's alpha value of greater than 0.6 for all the constructs: marketing mix (β=0.914, 4 items), organizational context (β=0.858, 3 items) and preparedness of SMEs (β=0.841, 3 items). Additionally, the AVE value of greater than 0.5 signified an appropriate estimate for all the variables. Also, the composite reliability of above 0.7 indicated internal consistency of all the constructs.

Table 2. Constructs reliability and validity

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Marketing mix	0.914	0.915	0.94	0.796
Organizational	0.858	0.859	0.914	0.779
Preparedness of SMEs	0.841	0.842	0.904	0.759

Additionally, the model complies with discriminant validity as revealed by higher value of square root of AVE than the inter-correlation with other constructs (Table 3).

Table 3. Discriminant validity

	Marketing mix (MM)	Organizational context (Org)	Preparedness of SMEs (Pre_SME)
Marketing mix	0.892		
Organizational	0.803	0.883	
Preparedness of SMEs	0.836	0.789	0.871

PLS bootstrapping was performed to obtain results related to the path and the significance level. Table 4 demonstrates path coefficient and t-statistics of the PLS bootstrapping model. Based on criterion (*t*-value ≥ 1.96 and *p*-value < 0.05), it can be inferred that organizational context and marketing mix had a significant influence in the preparedness of SME in the adoption of AI. Figure 1 illustrates the path coefficients of the structural model.

Table 4. Path coefficients after bootstrapping

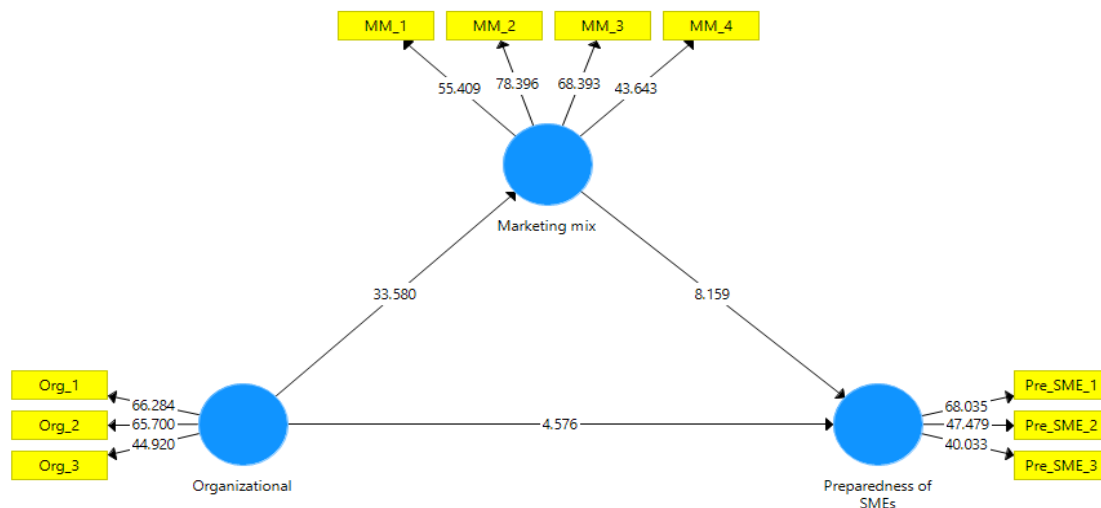|	Original Sample (O)	Sample Mean ($\bar{X}$)	Standard Deviation (SD.)	T Statistics	P Values
Marketing mix -> Preparedness of SMEs	0.569	0.569	0.069	8.244	0.000
Organizational -> Marketing mix	0.803	0.803	0.024	34.017	0.000
Organizational -> Preparedness of SMEs	0.332	0.333	0.073	4.572	0.000

Figure 1. Path coefficient for structural model

The direct, indirect and total effect of organizational context on the preparedness of SME is presented in Table 5. A positive and significant correlation was found between the variables. The direct effect showed significant influence of organizational context on the preparedness of SME to adopt AI with a beta coefficient of 0.332 (p<0.01). Similarly, the total effect of organizational context on preparedness of SME was significant (β=0.789, p<0.01) indicating a mediating role of marketing mix. It can be inferred that organizational context contributes to the marketing mix which in turn contributes to the preparedness of SME.

Table 5. Direct, Indirect and Total effect

Variable	Direct effect	Indirect effect	Total effect	T Statistics	P Values
Endogenous variable: Preparedness of SME					
Marketing mix	-	0.569	-	8.244	0.000
Organizational	0.332	0.457	0.789	27.759	0.000
Endogenous variable: Marketing mix					
Organizational	-	0.803	-	34.017	0.000

Further, the coefficient of determination (R^2) value of 0.645 indicates that 64.5% of the variation in marketing mix is because of organizational context, while 73.8% of variation in preparedness of SME occurs because of marketing mix. An adequate goodness of fit of structural model is demonstrated in Table 6. The model's predictive relevance is measured by Stone-Geisser's Q^2 value. The Q^2 value of greater than 0.3 for all latent variables indicated a significant level of predictive relevance. Additionally, the goodness of fit was assessed using standardized root means square residual (SRMR). A value of 0 indicates perfect fit, while value less than 0.08 indicate good fit.

Table 6. Stone-Geisser's Q2 value

Constructs	Cross Validated Redundancy (Q2)			Coefficient of determination (R2)	
	SSO	SSE	Q² (=1-SSE/SSO)	R Square	R Square Adjusted
Marketing mix	1280	628.064	0.509	0.645	0.644
Preparedness of SMEs	960	427.982	0.554	0.738	0.736

Overall model fit: standardized root means square residual (SRMR) = 0.053, d_ULS = 0.157, d_G 0.163, Chi-square = 314.325, NFI = 0.0.879

DISCUSSION

The main aim of this study was to explore the influence of organizational context in the preparedness of SME in the adoption of AI. Large enterprises are already reaping the benefits of AI; however, there has been a

considerable lack of adoption of AI in small and medium industries. Since SMEs are the economic backbone of many developing countries including Thailand, the present study is an attempt to identify the factors essential for the adoption of AI in SMEs. The findings of present study indicated a significant relationship between organizational context and the preparedness of SME in the adoption of AI. Further, this relation partially mediated the marketing mix.

Organizational level adoption of AI is essential to benefit from AI. In the successful adoption of AI organizational agility is considered as a key element. Aarstad and Saidl (2019) identified 20 factors in hindering AI adoption in European SME. Author argued that lack of clarity on the benefits of an AI initiative, lack of IT/AI competence, knowledge and understanding; no prior AI experience and lack of employee training can hinder AI adoption. Besides, organization's scepticism towards AI or technology and resistance to change can also have a negative effect on AI adoption. The findings of this study in terms of the positive effect of leadership and individual level adoption and system openness on AI adoption by SME were in agreement with prior research on SMEs of different sectors and from different countries. One of the main findings in the manufacturing SMEs was the lack of knowledge in the adoption of any new technology (Hansen & Bøgh, 2021). In Indian SME, the adoption, implementation and use of AI was brought by positive social change including improvement in management support and handling of pressure by leaders (Jadhav, 2021). According to Savola et al. (2018) the technical competence, vision and willingness of employees at a higher hierarchical level towards innovation and adoption of technology was the key element.

Further, customer knowledge management and organizational open culture for innovation is also crucial for the support of adoption of AI. In agreement with the present finding Chen et al. (2019) reported leadership quality influencing the organization's intention to adopt innovative technologies.

In agreement with AI adoption in other industries, Pillai and Sivathanu (2020) found that AI tech for talent acquisition in large industries like IT/ITeS is influenced by top management support and readiness of HR. According to the author, the stickiness to traditional practices reduces the usage of AI thereby indicating the importance of readiness of employees at higher level and at individuals to adapt to the new technology. Likewise, Stenberg & Nilsson (2020) reported positive effects of staff capacity and their competency and top management support on AI adoption in a government organization. It was argued that leadership quality of employees of top management enables AI implementation by prioritising and pushing the projects. Since SME is an industry with limited financial resources, adoption of high technology like AI can be less welcoming. Thus, acquiring talented people with AI knowledge and ready to share the knowledge will have lesser resistance in adoption of new technology. Further, the negative feeling of AI replacing human resources can be very challenging.

In the context of marketing mix, AI trends showed positive influence on 4Ps of marketing mix (Jarek & Mazurek, 2019) and in addition, Al Badi (2018) found that among the 4Ps, price is the most effective element in obtaining competitive advantage for the SMEs. According to Taiminen and Karjaluoto (2015), the use of digital marketing channels is imperative for the development of small business and enterprises including SMEs. In the present

study, marketing mix had a partial mediation on the relationship between organizational context and preparedness of SME in AI adoption. In this regard, Afriyie et al. (2019) concludes that transformational leadership of managers or owners and their inclination towards product, process, organization and marketing innovation increased the marketing performance of service sectors SME. It can be argued that this can enhance the preparedness of SME in adoption of new technology, AI in this particular case. Considering that SMEs have a small marketing budget, it can be posited that AI tools can benefit the marketing strategies which in turn can encourage the SMEs to integrate AI in their system (Dwivedi et al., 2021). An improvement in customer base and increased profitability of Saudi Arabia's SME was observed after using artificial intelligence-assisted social media marketing (AISMM). According to the author, AI-assisted marketing strategies can be beneficial to small businesses (Basri, 2020). Jabłońska and Pólkowski (2017) posited that AI tools can be used to identify the suitable mode and timing of promotion. Besides, product sale price and dynamic pricing based on supply and demand can help to automatize the marketing process of SMEs. Other AI tools like chatbots target customers and enhance communication. Further, studies have shown that AI tools can also be used as a guide to launch new products, create inventory management with an increasing growth and demand of consumers. According to Davenport et al. (2020), AI tools can effectively augment human managers. AI can affect different marketing practices like sales, online shopping, pricing, promotion, etc. Overall, it can be inferred that a positive influence of marketing mix can increase the preparedness of SME to adopt AI.

CONCLUSION

This paper contributes to the identification of factors influencing AI adoption by Thai SMEs. In the presented conceptual framework, at organizational context, individual- and leadership-level adoption and system openness had a significant influence on the preparedness of SME in adoption of AI. Further, a partial mediation of marketing mix between organizational context and preparedness of SME was observed indicating that benefits of AI tools in marketing mix variables will increase AI adoption by SMEs. The study has practical implications; it can be posited that Thai SMEs can effectively use AI to grow and operate multitude of activities in a smooth fashion in the competitive scenario where large and international firms have already started harnessing the benefits of AI. Additionally, in the current Covid-19 pandemic scenario, AI tools can allow remote access to services. Since the proposed model had a good fit, further work on the influence of environmental and technological context in the adoption of AI by Thai SME can be explored. In addition, the performance level of SME in the post adoption stage also needs exploration.

List of References

Aarstad, A., & Saidl, M. (2019). *Barriers to Adopting AI Technology in SMEs. A Multiple-Case Study on Perceived Barriers Discouraging Nordic Small and Medium-sized Enterprises to Adopt Artificial Intelligence-Based Solutions* (Master's Thesis). Retrieved from https://research-api.cbs.dk/ws/portalfiles/portal/60704162/790410_Aarstad_Saidl_Barrier

s_to_Adopting_AI_Technology_in_SMEs.pdf

Al Badi, K. S. (2018). The impact of marketing mix on the competitive advantage of the SME sector in the Al Buraimi Governorate in Oman. SAGE Open, 8(3), 2158244018800838.

Alsheibani, S., Cheung, Y., & Messom, C. (2018). Artificial Intelligence Adoption: AI-readiness at Firm-Level. In PACIS (p. 37).

Afriyie, S., Du, J., & Musah, A. A. I. (2019). Innovation and marketing performance of SME in an emerging economy: the moderating effect of transformational leadership. Journal of Global Entrepreneurship Research, 9(1), 1-25.

Antlová, K. (2009). Motivation and barriers of ICT adaptation in small and medium-size enterprises. Retrieved from https://otik.uk.zcu.cz/bitstream/11025/17290/1/11_antlova.pdf (07 July 2013).

Baker, J. (2012). The technology–organization–environment framework. Information systems theory, 231-245.

Basri, W. (2020). Examining the impact of artificial intelligence (AI)-assisted social media marketing on the performance of small and medium enterprises: toward effective business management in the Saudi Arabian context. International Journal of Computational Intelligence Systems, 13(1), 142-152.

Caesar, A. E., Maayir, G., Osei-Agyemang, A., & Anaba, O. A. (2017). Marketing Mix Practices in the Development of Small and Medium Enterprises in the Bolgatanga Municipality, Ghana. International Journal of Management Sciences and Business Research, 12, 90-102.

Chen, H. (2019). Success factors impacting artificial intelligence adoption: Perspective from the Telecom Industry in China (Doctoral dissertation, Old Dominion University). DOI: 10.25777/a8q8-gm13 https://digitalcommons.odu.edu/businessadministration_etds/102

Chopra, A. (2019, February). AI in supply & procurement. In 2019 Amity International Conference on

Artificial Intelligence (AICAI) (pp. 308-316). IEEE.

Davenport, T., Guha, A., Grewal, D., & Bressgott, T. (2020). How artificial intelligence will change the future of marketing. Journal of the Academy of Marketing Science, 48(1), 24-42.

Dwivedi, Y. K., Ismagilova, E., Hughes, D. L., Carlson, J., Filieri, R., Jacobson, J., ... & Wang, Y. (2021). Setting the future of digital and social media marketing research: Perspectives and research propositions. International Journal of Information Management, 59, 102168.

Engel, C., Ebel, P., & van Giffen, B. (2021). Empirically exploring the cause-effect relationships of AI characteristics, project management challenges, and organizational change.

Entrialgo, M., Fernandez, E., & Vazquez, C. J. (2001). The effect of the organizational context on SME's entrepreneurship: Some Spanish evidence. Small Business Economics, 16(3), 223-236.

Fredriksson, S. (2018). Organizational adaptation towards artificial intelligence: A case study at a public organization. (Master Thesis). Retrieved from https://www.diva-portal.org/smash/get/diva2:1221059/FULLTEXT01.pdf

Galetić, L., Načinović, B., & Aleksić, A. (2011). Organizational Characteristics of Small and Medium Croatian Enterprises: An Empirical Study.

Hansen, E. B., & Bøgh, S. (2021). Artificial intelligence and internet of things in small and medium-sized enterprises: A survey. Journal of Manufacturing Systems, 58, 362-372.

Huang, M. H., & Rust, R. T. (2021). A strategic framework for artificial intelligence in marketing. Journal of the Academy of Marketing Science, 49(1), 30-50.

Jabłońska, M. R., & Pólkowski, Z. (2017). Artificial intelligence-based processes in SMEs. Studies & Proceedings of Polish Association for Knowledge Management, (86).

Jadhav, D. S. (2021). Understanding Artificial Intelligence Adoption, Implementation, and Use in Small and Medium Enterprises in India.

(Walden Dissertations and Doctoral Studies). https://scholarworks.waldenu.edu/dissertations/10655

Jarek, K., & Mazurek, G. (2019). Marketing and artificial intelligence. Central European Business Review, 8(2).

Kawtrakul, A., & Praneetpolgrang, P. (2014). A history of AI research and development in Thailand: Three periods, three directions. AI Magazine, 35(2), 83-92.

Kumar, A., & Kalse, A. (2021). Usage and adoption of artificial intelligence in SMEs. Materials Today: Proceedings. 10.1016/j.matpr.2021.01.595.

Londhe, B. R. (2014). Marketing mix for next generation marketing. Procedia Economics and Finance, 11, 335-340.

Nugroho, M. A., Susilo, A. Z., Fajar, M. A., & Rahmawati, D. (2017). Exploratory study of SMEs technology adoption readiness factors. Procedia Computer Science, 124, 329-336.

Paul, S. K., Riaz, S., & Das, S. (2020, December). Organizational Adoption of Artificial Intelligence in Supply Chain Risk Management. In International Working Conference on Transfer and Diffusion of IT (pp. 10-15). Springer, Cham.

Pillai, R., & Sivathanu, B. (2020). Adoption of artificial intelligence (AI) for talent acquisition in IT/ITeS organizations. Benchmarking: An International Journal, 27 (9), 2599-2629.

Sastararuji, D., Hoonsopon, D., Pitchayadol, P., & Chiwamit, P. (2021, January). Cloud Accounting Adoption in Small and Medium Enterprises: An Integrated Conceptual Framework: Five factors of determinant were identified by integrated Technology-Organization-Environment (TOE) framework, Diffusion of Innovation (DOI), Institutional Theory (INT) and extended factors. In 2021 The 2nd International Conference on Industrial Engineering and Industrial Management (pp. 32-38).

Sakolnakorn, T. P. N. (2010). The Analysis Of Problem And Threat Of Small And Medium-Sized Enterprizes In Northeast Thailand. International Business & Economics Research Journal (IBER), 9(9).

Sandkuhl, K. (2019, July). Putting AI into Context-Method Support for the Introduction of Artificial Intelligence into Organizations. In 2019 IEEE 21st Conference on Business Informatics (CBI) (Vol. 1, pp. 157-164). IEEE.

Savola, T., Tuohimaa, T., & Berg, S. (2018). AI-Enhanced Marketing Management–Factors Influencing Adoption in SMEs.

Singh, M. (2012). Marketing mix of 4P's for competitive advantage. IOSR Journal of Business and Management, 3(6), 40-45.

Chalita, S. (2014). Demand for internet access and use of Small and Medium Enterprises (SMEs) in Thailand, 25th European Regional Conference of the International Telecommunications Society (ITS): "Disruptive Innovation in the ICT Industries: Challenges for European Policy and Business" , Brussels, Belgium, 22nd-25th June, 2014, International Telecommunications Society (ITS), Calgary

Sriphaiboon, R., & Somjai, S. (2019). Potential development guideline of

Thai SMEs entrepreneurs. International Academic Research Conference in Yunnan, (pp 100-103).

Stenberg, L., & Nilsson, S. (2020). Factors influencing readiness of adopting AI: A qualitative study of how the TOE framework applies to AI adoption in governmental authorities. (Master Thesis). https://www.diva-portal.org/smash/get/diva2:1460888/FULLTEXT01.pdf

Taiminen, H. M., & Karjaluoto, H. (2015). The usage of digital marketing channels in SMEs. Journal of Small Business and Enterprise Development.

Truvé, T., Wallin, M., & Ryfors, D. (2019). Swedish manufacturing SMEs readiness for industry 4.0: what factors influence an implementation of artificial intelligence and how ready are manufacturing SMEs in Sweden?.

Watney, C., & Auer, D. (2021). Encouraging AI adoption by EU SMEs. Retrieved from https://laweconcenter.org/wp-content/uploads/2021/04/PPI_Encour

aging-AI-adoption-by-EU-SMEs-
3.24.21-2.pdf (07 July 2021)

Wieland, J. (2018). SME Marketing mix
standardization in the B2B
market. Journal of Management
Policy and Practice, 19(1), 45-55.