

## Guest Editorial Preface

# Special Issue on Embracing Industrial Revolution 4.0 in ASEAN

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### INTRODUCTION

The widespread of digital transformation, the growing connectivity of everything, as well as the advancement of Artificial Intelligent (AI) has led to a new revolution, Industrial Revolution 4.0 (IR 4.0). The impact of IR 4.0 is huge to many human activities as it changes the way people live, work and interacts. IR 4.0 is coming, whether we like it or not, embracing and adapting to it will lead us to utilize it for the development of society (Almunawar, Islam and Ordóñez, 2022; Anshari and Almunawar, 2022; Ordóñez, Xi and Almunawar, 2022; Ordóñez et al., 2022).

There are many aspects of IR 4.0. These include business, economic, social, cultural, technological, and privacy and security. There is much research on the technical and technological aspects of IR 4.0. However, related research on business, economics, and other aspect are growing recently.

### OBJECTIVES OF THE SPECIAL ISSUE

The aim of the special issue is to provide research progress and critical analysis of the state of the art of IR 4.0 in the ASEAN so that readers can have clear insights about these issues in this important region.

It covers different topics, from digital transformation, digital governance, digital economy, digital business ecosystem to the utilization of Internet of Things (IoT) in businesses, and management, economics diversification to finance.

### CONTENTS OF THE SPECIAL ISSUE

The first paper of the Special Issue is titled “The Perspective of Balancing Economic Growth Healthcare System and Environmental Prevention the Efficient Budget for ASEAN-3 Countries” (by Anuphak Saosaovaphak, Chukiat Chaiboonsri, Satawat O. Wannapan. It “econometrically computes portfolio optimization and predict efficiency frontiers for solving the most sensible scenario to suggest a sustainable policy in the three important pillars such as the growth of economic systems, environmental management, and public healthcare. The main observations are annual time-series information between 2000 and 2017 and collected from three countries in ASEAN. Singapore, Thailand, and Malaysia are the target. Methodologically, this research is to apply the quantum mechanism and the wave function for clarifying a real data distribution; true mean, and standard deviation of the data. These outcomes are the initial raw material for the modern portfolio optimization (for short-run policies) and efficient frontier computation (for long-term policies). Empirically, the results show some exclusive issues that can be the help for managing feasible budget allocations fairly and sustainably”.

The paper titled “Factors Influencing Behavioural Intention to Adopt the QR-Code Payment: Extending UTAUT2 Model” (by Wen-Jing Suo, Chai-Lee Goi, Mei-Teh Goi, and Adriel Khoon-Seng Sim) seeks to “identify the factors which affect the consumers’ behavioural intention to adopt the Quick response code (QR-code) mobile payment. This study extends the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) with the personal innovativeness construct. This study reveals that performance expectancy, social influence, habit, price value, and personal innovativeness in information technology are significantly related to behavioural intention to adopt QR-code mobile payment. However, effort expectancy, facilitating conditions, and hedonic motivation are found to be statistically insignificant. This study presents one of the few empirical works investigating the role of consumer innovativeness and thus validates the inclusion of personal innovativeness as constructed in mobile payment adoption research. Findings from this study provide valuable insights for mobile payment application developers and mobile payment marketing teams”.

The paper titled “The Role of Smart Farming in Sustainable Development” (by Siti Fatimahwati Pehin Dato Musa, Khairul Hidayatullah Basir, and Edna Luah) “explores the development of agriculture in to smart farming and how smart farming can contribute to the sustainable development goals. The paper focuses on how smart farming can be imparted in sustainable agriculture by analyzing the environmental, economic and social impact. This paper applied a systematic literature review technique to assess published academic literature on smart farming and sustainable agriculture in Southeast Asia. The review identified that smart farming can lead to less environmental damage, lower cost and higher productivity and has the potential to create decent jobs for the youth ultimately leading to a sustainable food system”.

The paper titled “Halal-Tayyiban and Sustainable Development Goals: A SWOT Analysis” (by Pg Siti Rozaidah Pg Hj Idris, Siti Fatimahwati Pehin Dato Musa, and Wardah Hakimah Hj Sumardi) presents “a SWOT analysis study in order to identify the strengths, weaknesses, opportunities and threats in incorporating the concept of Halal-Tayyiban alongside the Sustainable Development Goals (SDGs). Food and agricultural system are a common thread linking all the 17 SDGs hence this study will focus on the global food industry. The concept of Halal-Tayyiban (clean and pure), takes into account protection of health, food safety, animal rights, the environment, social justice and welfare in the food production, fair business practices and ethics. It is seen as a more comprehensive system that aims to accomplish international standards compliance, making it universally acceptable. Tayyiban therefore can be a selling point for businesses giving the Halal industry a long-term strategic advantage. This study also seeks to recommend strategies to leverage on the strengths and opportunities and resolve the weaknesses as well as overcoming the threats”.

The paper, titled “Technology Leadership in Malaysian Schools: The Way Forward to Education 4.0 – ICT Utilization and Digital Transformation” (by Simin Ghavifekr and Seng Yue Wong), states that “education 4.0 is the answer to the global needs for the advanced integration of humans and technology. Leading school’s technology utilization can be the way forward to support education 4.0 realization. This study aims to investigate the effects and roles of principals’ technology leadership towards teachers’ ICT utilization and students’ academic performance in secondary schools in Selangor, Malaysia. This empirical study uses a set of questionnaires to gather information from respondents who are in the teaching profession. A total of 310 questionnaires were completed and analyzed. The findings have shown significant positive impacts between the effects of the technology leadership roles of principals on teachers’ effective ICT utilization and students’ academic performance. The integration of ICT and technological tools in schools has a great challenge towards the new era of the Education 4.0 system. This suggests that principals who embrace technology will effectively lead their schools to acquire educational resources to enhance student engagement and learning”.

The paper titled “Assessing Brunei Darussalam Public and Private Sector Readiness Towards Big Data Application” (by Muhammad Azmi Sait and Muhammad Anshari Ali) is an exploratory study with the aim “to assess and investigate Brunei Darussalam’s readiness in developing and applying big data technologies for its public and private sectors, using Social, Technological, Environmental

and Policy (STEP) framework. The results show that the population are digitally literate (Social) and utilises smart devices as well as internet network connectivity that is widely offered by the local telecommunications company (Technology). The government of Brunei Darussalam established multiple digital transformation initiatives including implementation of 5G connectivity as well as digital economy masterplan to digitally transformed in the near future (Environment). Regardless of the absence of national digital data privacy policy (Policy) in Brunei, the recent nation's successful big data application in public sector – BruHealth Application – to contain Covid-19 community spread was achieved. Alas, the existence of such policy in the near future will create opportunities for the local private sectors to capitalise big data technologies to their business strategies”.

The paper titled “Purchase Intention in Fashion Industry on Local and International E-Commerce in Indonesia” (by Lim Sanny) aims to study the “impact of the two categories of sales promotional tools (monetary and non-monetary) on purchase intention with the consideration of consumers’ perceived quality for fashion products in local and international e-commerce. As the competition between local and international e-commerce is increasingly fierce, it requires an appropriate sales promotion strategy that is in accordance with customers perceptions in Indonesia to capture customers’ purchase intention. This research is purely quantitative by using primary data through distributing online questionnaires to customers who have shopped fashion products in local or international e-commerce. Path analysis was used to verify the conceptual model and hypotheses in this research. This research confirms that sales promotions (both monetary and non-monetary) affect customers’ perceived quality of a product in both e-commerce”.

The paper titled “ASEAN Towards a Global Halal Logistics Through the Digitally-Enabled Community” (by Sutan Emir Hidayat and Khairunnisa Musari) states that “the Association of Southeast Asian Nations (ASEAN) is leading the development of global halal trade and has the opportunity to become a leader in the global halal supply chain, especially in global halal logistics. Given the push towards digital transformation in creating a halal ecosystem and regarding the agenda of ASEAN towards a digitally-enabled economy, this study wants to examine whether ASEAN digitally-enabled community is correlated with ASEAN’s chances of becoming a global halal logistics. Through a correlation test, it is found that there is a statistically significant relationship between ASEAN digitally-enabled community, as measured in internet subscribers/users per 100 persons and cellular/mobile phone per 100 persons, and the opportunity for ASEAN to become a global halal logistics, measured in ASEAN GDP, total air cargo, total trade in goods, and international air passenger traffic. This is probably the first study that preliminarily confirms digitally-enabled community is very important to strengthen ASEAN’s opportunities to become the global halal logistics”.

The paper titled “Supply Chain Digitalization and Operational Performance” (by Niken Aninda and Etikah Karyani) studies “the effect of supply chain digitization on operational performance and new revenue streams. Data were collected from 123 companies or 492 observations. The samples are companies listed on the Indonesia Stock Exchange with a focus on 3 types of industry, namely the service industry, manufacturing industry, and financial industry from 2016 to 2019. Using the ordinary least square (OLS) model, this study find that supply chain digitalization practices have a positive effect on operational performance, but a negative effect on new revenue stream. Thus, stakeholders can use supply chain digitalization practices as a consideration in making financial decisions as it has influence for operational performance”.

The paper titled “The Key Factors of the Industrial Revolution 4.0 in the Malaysian Smart Manufacturing Context” (by Mohd Syaiful Rizal Abd Hamid, Nor Ratna Masrom, and Nur Athirah Binti Mazlan) states that “IR 4.0 is a new phase for the current trend of automation and data exchange in manufacturing industry that focuses on cloud computing, interconnectivity, the Internet of Things, machine learning, cyber physical learning and creating smart factory. The purpose of this article was to unveil the key factors of the IR 4.0 in Malaysian smart manufacturing context. Two key data collection methods were used: (1) primary data from the face-to-face interview (2) secondary data from the previous study. Significantly, five key factors of IR 4.0 consider for this study. Autonomous

production lines, smart manufacturing practices, data challenge, process flexibility, and security. As a result, IR 4.0 for quality management practices might get high impact for the best performance assessment, which addressed in various ways; there are few studies in this area have been conducted in Malaysian manufacturing sector, and to recommend the best practices implemented from the managers' perspectives. For scholars, this enhances their understanding and highlight opportunities for further research".

The paper titled "Assessing Brunei Darussalam Public and Private Sector Readiness Towards Big Data Application" (by Muhammad Azmi Sait and Muhammad Anshari Ali) presents an exploratory study "to assess and investigate Brunei Darussalam's readiness in developing and applying big data technologies for its public and private sectors, using Social, Technological, Environmental and Policy (STEP) framework. The results show that the population are digitally literate (Social) and utilises smart devices as well as internet network connectivity that is widely offered by the local telecommunications company (Technology). The government of Brunei Darussalam established multiple digital transformation initiatives including implementation of 5G connectivity as well as digital economy masterplan to digitally transformed in the near future (Environment). Regardless of the absence of national digital data privacy policy (Policy) in Brunei, the recent nation's successful big data application in public sector – BruHealth Application – to contain Covid-19 community spread was achieved. Alas, the existence of such policy in the near future will create opportunities for the local private sectors to capitalise big data technologies to their business strategies".

The paper "Do Demographic Variables Make a Difference in Entrepreneurial Leadership Style? Case Study Amongst Micro and Small in Creative Economy Entrepreneurs in Jakarta, Indonesia" (by Aristo Surya Gunawan and Ati Cahayani) affirms that "industry 4.0 brings a challenge in terms of labor reduction. However, there is an opportunity in job creation for the creative industry/economy. The creative economy in Indonesia shows an increasingly contribution to the Indonesian economy in recent years, and it is also predicted to continue increasing in the future. Leadership for the entrepreneur is needed to make their business entity (Micro Small Medium Enterprises) to survive and succeed. This research aims to find out whether there is a difference in entrepreneurial leadership style with four demographic variables, i.e., gender, age, education level, and marital status".

The paper "Coping With the Changes That Challenge Business and Education Sectors in Thailand 4.0" (by Kannapat Kankaew, Ekachat Tansiri, Rojanard Waramontri, Nisara Paethrangsi, Korawin Kungwol, Bussaba Sitikarn, and Kanittha Charernnit) addresses "the ideas, and cases based on research that emanate from the application of the contingency theory, resource-based views theory, and the institutional theory to cope with an abruptly changing paradigm. The paper attempts to provide a holistic view of the IR 4.0 impact on the business changes and the usage of technology in the education sector among Thais. This paper stresses the role of the educational sector by creating a shift from static into dynamic triggered by the intense competition in the Thailand markets. Keeping in view such a scenario organization should be pliable and enabled enough to transform existing resources into intellectual resources. This would result in the revitalization of the entire organizational human capital from leaders to teams, and individuals contributing to morally support employee well-being and this would strengthen the reaping extraordinary organization results in terms of output. All this is seen through the lens of IR 4.0 as applied to the current Thai business and education scenario".

The paper "Smart Learning Environment (SLE) in the Fourth Industrial Revolution (IR 4.0): Practical Insights Into Online Learning Resources" (by Dedi Mulyadi, Miftachul Huda, and Islah Gusmian) discussed "the explanatory approach in dealing with SLE by advancing online learning sources. The systematic approach of searching for the relevant articles on SLE in IR 4.0 has been widely identified through two electronic databases, Scopus and Web of Sciences. Through adopting such digitally systematic search program, identification was made on the various elements in terms of online learning resources (OLR). This attempts to propose the SLE framework model with an innovative approach in enhancing the learning through incorporating IR 4.0 platform to utilize the variety of information sources together with knowledge attribution in the higher education (HE).

The contribution provides theoretical framework with the guideline of well-adapted performance in the educational activities as the new normal trend. In achieving this attainment, the readiness of both instruction facilities and accessibility procedure is significantly the main basis in ensuring the process flow in enlarging the digital learning”.

“Building Acquisition Management Capability to Improve Firm Performance in Acquisitions: An ASEAN Context” (by Mohamad Oki Ramadhana, Sri Moertiningsih Adioetomo, Biakman Irbansyah, and Yanki Hartijasti) states that “in the past two decades, the number of cross-border mergers and acquisitions in ASEAN has progressively expanded as the region has become a desired economic market for trade and investment. Therefore, this study aimed to identify the factors contributing to the success of acquisitions by corporations. It investigates the role of acquisition management capability with strategic integration and acquisition. The non-probability sampling strategy was used to collect information from 51 firms. With a five-point Likert scale, a systematic questionnaire was designed to test the latent variables by employing confirmatory factor analysis. The quantitative method of Structural Equation Modeling was used in the analysis. The results show that the structural model had a Goodness of Fit Index value that indicates all three latent variables and independent variables were valid. The findings indicate that acquisition management capability have a central role in advancing the overall integration of the acquiring firm in the ASEAN context”.

The paper “Determinants of Auditor Choice in Non-Financial Listed Firms on the Vietnamese Stock Market” (by Phung Anh Thu and Thai Hong Thuy Khanh) highlights the role of audit “in maintaining and issuing high-quality financial statements. This article investigates the factors that can affect auditor choice in developing countries. The authors utilize STATA to test Binary Logistic on a sample of Vietnamese listed firms data during the period between 2014 and 2017. These studies have examined the characteristics of the firm itself or the client’s characteristics, prompting the process of selecting an auditor in the same regulatory environment. The results present that there is a positive relationship between firm size, firm growth, and auditor choice. While financial leverage has a negative relationship with the selection of audit firms”.

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## REFERENCES

- Almunawar, M. N., Islam, Z., & Ordóñez de Pablos, P. (2022). *Digital Transformation Management: Challenges and Futures in the Asian Digital Economy*. Routledge. doi:10.4324/9781003224532
- Anshari, M., & Almunawar, M. N. (2021). Adopting open innovation for SMEs and industrial revolution 4.0. *Journal of Science and Technology Policy Management*. doi:10.1108/JSTPM-03-2020-0061
- Ordóñez de Pablos, P., Zhang, X., Almunawar, M. N., & Gayo Labra, J. E. (2021). *Handbook of Research on Big Data, Green Growth, and Technology Disruption in Asian Companies and Societies*. IGI Global.
- Ordóñez de Pablos, P., Zhang, X., & Almunawar, N. (2022). *Green, Circular, and Digital Economies as Tools for Recovery and Sustainability*. IGI Global.