Received 7 December 2021
Revised 16 June 2023
3 October 2023
13 December 2023
15 March 2024
Accepted 27 April 2024

Financial reporting quality, industrial revolution 4.0 and social well-being among Malaysian public companies

Wan Adibah Wan Ismail
Faculty of Accountancy, Universiti Teknologi MARA, Merbok, Malaysia
Marziana Madah Marzuki
Faculty of Accountancy, Universiti Teknologi MARA, Machang, Malaysia, and
Nor Asma Lode
Tunku Puteri Intan Safinaz School of Accountancy (TISSA-UUM), Universiti Utara Malaysia, Sintok, Malaysia

Abstract

Purpose – This study examines the relationship between financial reporting quality, Industrial Revolution 4.0 and social well-being of stakeholders among public companies in Malaysia.

Design/methodology/approach – The sample of the study includes 232 firm-year observations of Malaysian publicly listed companies from 2013 to 2017. Social well-being is measured using social pillar scores from the Environmental, Social and Governance (ESG) data provided by Refinitiv. The study identified companies as an adopter of IR 4.0 based on their disclosure on the use of autonomous robots, simulation, cloud, horizontal and vertical system integration, cybersecurity, additive manufacturing, augmented reality and big data analytics in their financial reports. Financial reporting quality is measured using discretionary accruals.

Findings – This study found that financial reporting quality and IR 4.0 are related to social well-being, particularly the workforce. These results imply that companies with higher adoption of IR 4.0 are more likely to provide more information concerning job satisfaction, a healthy and safe workplace, maintaining diversity, equal and development opportunities for its workforce. Furthermore, the results show that firms with lower discretionary accruals (i.e. higher quality of financial reporting) are more likely to provide more information about social well-being. The results are robust even after addressing endogeneity issues.

Research limitations/implications – This research contributes new insights into the role of financial reporting quality and IR 4.0 in enhancing social well-being in Malaysia. These findings offer valuable input for regulators striving to advance the United Nations' 2030 Agenda for Sustainable Development.

Practical implications – This study carries substantial practical implications for policymakers and businesses alike. It underscores the importance of embracing IR 4.0 technologies and integrating them into strategic planning to foster social well-being. These insights can guide policymakers in shaping economic strategies and assist businesses in prioritizing financial reporting quality while engaging stakeholders to promote social well-being.

Originality/value – This is the first study to investigate the combined relationship of financial reporting quality and IR4.0 on social well-being, which provides valuable evidence in this novel domain. While previous studies have primarily explored the relationship of IR4.0 on sustainability from an environmental and human

Asian Journal of Accounting Research
Vol. 9 No. 4, 2024
pp. 294-308
Emerald Publishing Limited
e-ISSN: 2443-4175
p-ISSN: 2459-9700
DOI 10.1108/AJAR-12-2021-0263

Special thanks go to the editor and anonymous reviewers whose suggestions have considerably improved the manuscript. This research was supported by Ministry of Education (MOE) through Fundamental Research Grant Scheme (FRGS/1/2018/SS01/UUM/02/14).

resource perspective, this study sheds light on the specific dimension of social well-being, hence promoting sustainable development goals by the United Nations in 2030.

Keywords Financial reporting quality, Social well-being, Industrial revolution 4.0

Paper type Research paper

1. Introduction

Recently, social well-being, peace, justice, and strong institutions have become the main world agenda due to the global challenges of violence, disease, human rights, neglected populations, and mortality rates. In 2015, the United Nations launched "the 2030 Agenda for Sustainable Development" to provide a shared blueprint for peace and prosperity for nations and the world. The launch of this agenda is regarded as an urgent call for action by all developed or developing countries to build global partnerships for sustainable development (United Nations, 2015).

Malaysia has proactively integrated social well-being (SW) into its development agenda by aligning it with Sustainable Development Goals. This includes deploying new technologies and ensuring accountability in combating corruption and crime. Outlined in the Malaysia 12th Plan, businesses are encouraged to harness technological advancements while concurrently championing responsible practices, thereby contributing to the perpetuation of social well-being. The plan highlights that in strengthening social well-being, businesses need to examine their business models and develop high-technology-powered solutions in the future. The plan also emphasizes that firms' reputation and degree of trust with stakeholders which are essential to help firms embed sustainability elements in their business strategy (Economy Planning Unit, 2021). The reputation and trust can be developed through high financial reporting quality issued by firms.

Investors have also recognized SW as an essential measure of company valuation and performance in making ethical and responsible investment decisions. For example, Ting *et al.* (2020) claimed that social relations offer many advantages to a firm, such as the retention of human resources, customer retention, productivity improvements with environmental management, improvements in local community relationships, and attraction of social and ethical investors. In addition, the indicator for companies to be involved with SW includes disclosures related to product responsibility, community, human rights, diversity and opportunity, employment quality, health and safety, and training and development (Berman *et al.*, 1999).

Despite its importance, the relationship of digital technology and the quality of financial reporting on social well-being have been less explored, especially in developing countries such as Malaysia. Previous studies have investigated the relationship of Industrial revolution 4.0 (IR4.0), particularly on digital technology, on sustainability. Nevertheless, these studies focused on the relationship of IR4.0 on environmental sustainability in the context of business production (Bonilla *et al.*, 2018), future work and ecological consequences (Gabriel and Pessl, 2016), occupational health and safety (Min *et al.*, 2019), human resource practices (Gan and Yusof, 2019), business strategy (Nagy *et al.*, 2018), and human capital development and consumer behavior (Sima *et al.*, 2020). Bonilla *et al.* (2018) stressed that technology gives value to institutions; however, the relationship of technology has not been sufficiently explored from a sustainability perspective due to its novelty and different degrees of implementation within countries.

The literature on the relationship between financial reporting quality and social well-being is limited. Ismail *et al.* (2021) found that in addition to increasing revenue and profitability, firms' financial well-being can also mitigate agency problems, earnings management and financial reporting irregularities. Hoang *et al.* (2019) highlighted that when earnings reported by firms are in high quality, i.e. less manipulated by accruals, it is an indication that firms are responsible in reporting the earnings and they are likely to be responsible towards corporate social disclosure. Nevertheless, these studies investigated the relationship of financial reporting quality on sustainability in the context of corporate social

responsibility (Hill and Lee, 2012) and information disclosure (Souza *et al.*, 2020). Even though sustainability is important and enhances an organization's value, over investment could create a moral hazard problem among managers, as it may provide certain private benefits that would not be expected from a typical investment (Hill and Lee, 2012). Thus, financial reporting quality is capable of discipline managers' investments in social well-being.

Therefore, the objective of this study is to investigate the relationship of the adoption of IR4.0 technologies based on its disclosure in the annual report and financial reporting quality on social well-being in Malaysia. In contrast to other developed countries, the SW in this new economy requires businesses in Malaysia to replace their product and services concepts with more creative and innovative ways of digital technology which could potentially increase the quality of financial reporting. This study is underpinned by stakeholder theory, which explains behavior in labor markets and social well-being. The research employed a quantitative approach, in which data were collected from the annual reports of companies in Malaysia. To measure IR4.0 adoption, we analyzed the disclosures made by companies regarding their use of digital technologies and innovative practices. Financial reporting quality is assessed using discretionary accruals as an indicator.

The findings show that companies with a higher adoption of IR4.0 technologies, as indicated in their disclosures, tend to have higher levels of job satisfaction among employees. Furthermore, these companies demonstrate greater concern for the environmental, social, and governance aspects. On the other hand, firms with lower financial reporting quality, as reflected by higher discretionary accruals, tend to provide less information related to job satisfaction and environmental, social, and governance factors. These findings suggest that the adoption of IR4.0 technologies and the presence of high-quality financial reporting can positively be related to social well-being within organizations. This study highlights the importance of embracing innovative technologies by prioritizing transparent financial reporting and engaging stakeholders to enhance social well-being in the corporate sector.

This study contributes to the existing literature by addressing this research gap and offering original insights. First, we extend the literature on the relationship of IR4.0 adoption and financial reporting quality on social well-being in Malaysia, as the evidence is relatively scarce. Several studies have been conducted in Malaysia to relate the industrial revolution and social well-being. Nevertheless, most of these studies have focused on education (Alakrash and Abdul Razak, 2021) rather than the corporate sector. While previous studies have explored the relationship of IR4.0 on various aspects of sustainability, such as environmental and human resource practices, this study focuses on the specific dimension of social well-being. Second, this study provides an overview of sustainable development practices, particularly on social well-being in Malaysia, as part of the promotion of sustainable development goals by the United Nations in 2030. This study highlights how firms in Malaysia have played a role in supporting the United Nation agenda which has become part of Malaysia's government vision and mission in promoting sustainability. By filling these gaps, this study provides original contributions to the field, enriches the knowledge base, and offers valuable insights for both researchers and practitioners.

This study has significant practical implications for both businesses and policymakers. It emphasizes on the importance of incorporating IR4.0 technologies into business strategies to enhance social well-being. The study also highlights the role of high-quality financial reporting in promoting social well-being by providing relevant information. This study underscores the significance of stakeholder theory and stakeholder engagement in understanding and managing the relationship of businesses on social well-being. The findings suggest that businesses should embrace IR4.0 technologies by prioritizing high-quality financial reporting and actively engaging stakeholders to foster social well-being. Moreover, the findings provide significant input for regulators and policymakers in Malaysia, especially in providing incentives for companies that adopt IR 4.0, in planning the

country's future economic plan and direction. These results could also be useful for regulators and policymakers in other countries with similar economic environments.

The remainder of this paper is divided into four sections. The next section of the paper discusses the literature review and hypothesis development. Then, section 3 presents the methodology, section 4 discusses the findings and discussions, and the final section ends with conclusions.

2. Literature reviews and hypothesis development

2.1 Underpinning theory in social well-being

Traditionally, firms were seen as entities primarily focused on maximizing benefits for investors, often neglecting the interests of other stakeholders like employees, suppliers, and customers (Donaldson and Lee, 1995). This view faced criticism as it was perceived to prioritize investors over others. In response to these criticisms, stakeholder theory emerged in the 1980s, gaining acceptance as it proposed that various individuals or groups with legitimate interests should have equal priority within a business (Freeman, 1984). Stakeholder theory is most frequently used in social, environmental, and sustainability management research (Hörisch *et al.*, 2014, 2020). Hörisch *et al.* (2014) stressed that stakeholder theory can be applied in the context of sustainability by focusing on managing stakeholder relationships. Top management should identify the stakeholders involved in business activities and focus on sustaining their well-being. This can be done by generating mutual interests between different stakeholders, which ultimately creates value for all the stakeholders involved. It emphasizes that in creating value for all stakeholders, companies need to provide an important contribution toward sustainable development of the economy and society (Freudenreich *et al.*, 2020).

Several studies have highlighted the relationship between stakeholder theory and sustainability with the key factor in this relationship. Uribe *et al.* (2018) highlighted that other than the four main dimensions of sustainability – environmental, economic, political, and social – there are two complementary sub-categories of innovation and technology, and business ethics which are demanded by stakeholders and needed to be applied to achieve sustainability. Innovation and technology cover an important part of the scope of application which stresses the role of IT systems, software projects, R&D, and e-commerce in enabling stakeholders to interact with each other at different levels. In addition, achieving sustainability also calls attention to transforming organizations towards enhancing value ethically and in an accountable way. Torelli *et al.* (2020) supported the idea that different stakeholder engagement processes could enhance materiality analysis, enabling companies to appropriately define their companies' report content. The Sustainability Accounting Standard Board (2013) highlights that stakeholder engagement results in the quality of reporting, which at the end, enhances sustainability and firm value.

2.2 Financial reporting quality and social well-being

Financial reporting quality is a general conceptual term that can be defined from various perspectives. Previous researchers have recognized different aspects of financial reporting quality using certain characteristics of earnings components. The quality of earnings is perceived as the size of the expected reported earnings level, which is more stable and less volatile in terms of earnings number (Bodie, 2002). Srinidhi *et al.* (2011) explained that the quality of earnings is the capability of the current year earnings that reflects future cash flow and earnings. Hence, earnings quality is referred to as the extent to which current reported earnings are used to forecast the future performance of companies.

Earnings quality is defined as the ability to reflect permanent earnings and information about the company's value and to serve as a good guide to the firm's long-run profit (Dichev *et al.*, 2013). In other words, the information of earnings must be presented in an appropriate,

relevant, understandable, comparable, timely and verifiable manner in order to help firms to make a valid decision (Anto and Yusran, 2023).

Therefore, the quality of earnings is an essential basis of earnings reported in financial statements and is relied upon by users such as analysts and investors when making financial investment decisions. It also plays a vital role in reducing information asymmetry among the users of accounting information (Wan Ismail *et al.*, 2023b), hence, it can reduce agency problems (ElBannan and Farooq, 2019). It also provides management accountability to the firms for the funds or assets entrusted to them (Muraina and Dandago, 2020).

The literature on the relationship between financial reporting quality and social well-being is limited. Chakroun *et al.* (2022) highlighted that corporate social responsibility moderates the relationship of earnings management on firm financial performance which shows that there is a relationship between social well-being and accounting quality. Yang and Tang (2022) and Jiang *et al.* (2022) showed that the firms usually engage in poor financial reporting quality such as earnings management in response to air pollution. Ismail *et al.* (2021) found that in addition to increasing revenue and profitability, firms' financial well-being can also mitigate agency problems, earnings management and financial reporting irregularities. They found that brand equity reduces income-inflating discretionary accruals and earnings restatement announcements, showing that brand equity is negatively associated with the likelihood of manipulation. Hoang *et al.* (2019) highlighted that when earnings reported by firms are in high quality, i.e. less manipulated by accruals, it is an indication that firms are responsible in reporting the earnings and thus are likely to be responsible towards corporate social disclosure. In contrast, Souza *et al.* (2020) found no relationship between social well-being (CSR) and financial reporting quality disclosure. Their findings suggest that socially responsible companies are unrelated to lower or higher levels of earnings management.

Despite limited evidence on financial reporting quality and social well-being, we believe that financial reporting quality affects social well-being underpinned by stakeholder theory, as firms are honest and transparent in their reporting. Therefore, we propose the following:

H1. There is a positive relationship between financial reporting quality and SW among Malaysian listed companies.

2.3 Industrial revolution 4.0 and social well-being

Industrial Revolution 4.0 (IR 4.0) can be defined as a field of study that combines computer science, engineering, and related disciplines to build machines with observations by humans (Murphy *et al.*, 2021). This revolution includes visually perceiving images, speech recognition, translating languages, and adapting to new information (Murphy *et al.*, 2021). A study by Warren *et al.* (2015) claimed that artificial intelligence prefers accountants to concentrate on decision-making rather than collecting data and traditional analysis of companies' performance. Gallab *et al.* (2021) highlighted that automation in the industrial revolution can help companies to enhance productivity, increase revenue, reduce overproduction and waste, reduce errors, improve product customization, and many more. Thus, business management and internal controls are more effective (Warren *et al.*, 2015).

Furthermore, with the emphasis on the Internet of Things (IoT) in IR 4.0, the exchange of information within and outside the organization is greatly accelerated (Türegün, 2019). Through interconnectivity, the IoT develops digital technology to a new level, whereby information becomes more transparent, the system is under control, and the managers need to continuously access the online database. Türegün (2019) further mentioned that the use of online cloud applications would require secure corporate data from possible illegal actions, as the data are securely encoded. Therefore, cloud service providers are obliged to provide a safe

environment to store organization's sensitive information, as society is obliged to understand the risks.

The most recent findings shed light on transformative relationship of IR 4.0 on society and organization. Csiki *et al.* (2023) provided evidence that technological advancement is positively related to the organization and people skills (i.e. lean method) to meet the changing customer expectations (e.g. perfect quality, low cost, increased variety). In a similar vein, the adoption of new technologies (e.g. 3D printing, cloud and cybersecurity) has a significant relationship with increased productivity, higher wages and growth in sales (Cirillo *et al.*, 2023). These findings suggest that the adoption of new digital technologies associated with IR 4.0 could have a direct relationship with social well-being.

Various studies have investigated the relationship of digital technology on social well-being through the industrial revolution. Mourtzis *et al.* (2022) emphasized that the relationship of industrial revolution will extend to societal transformation, which eventually leads to the generation of a new society that focuses on the social and human-centric aspect of the tools and technologies introduced under the framework of Industry 4.0. Malik *et al.* (2021) and Sharma *et al.* (2021) provided evidence that digital technology from the industrial revolution increases society's satisfaction, either from the perspective of job or service satisfaction. Malik *et al.* (2021) highlighted that the use of artificial intelligence (AI) allows firms to manage global talent, especially in emerging markets, leading to job satisfaction and commitment and, lastly, reducing talent turnover. Sharma *et al.* (2021) stressed that the service quality provided by digital technology in government service can create a positive public image and satisfaction with stakeholders. These two factors fulfill the entrepreneur's communion motives and satisfaction. Benzidia *et al.* (2021) found a positive relationship between blockchain technology and social capital factors in buyer-supplier relationships. Their findings emphasized the critical role of technological capital in buyer-supplier relationships, particularly in exploiting internal capabilities to achieve innovation targets, which eventually benefit buyers and enhance social well-being. Hohn and Durach (2021) highlighted that the use of technology can reinforce existing supply chain governance structures, increase production speed and heighten market competition. This situation can increase social well-being and amplify the existing social sustainability issues in contemporary production systems.

Based on the benefits of digital technology and stakeholder theory discussed above, this study posits that the adoption of IR 4.0 technologies could relate to SW.

H2. There is a positive relationship between Industry Revolution 4.0 and social well-being among Malaysian listed companies.

3. Methodology

3.1 Data and sample

In essence, this study relies on quantitative research methodology, drawing from secondary data found in annual reports. Quantitative research revolves around gathering and scrutinizing numerical data, ideally suited for examining correlations and drawing broader conclusions applicable to extensive populations. The study focuses on Malaysian public listed companies known for their established nature and comprehensive disclosures within their annual reports and websites.

The sample for this study consists of non-financial companies listed in Bursa Malaysia from 2013 to 2017. The data were collected from multiple sources, including the Refinitiv database for financial and ESG social pillar scores as well as hand collected data from annual reports for IR4.0 and corporate governance. Initially, there were 806 companies identified in 2017; however, firms from the financial, insurance, and real estate brokers were excluded

because of their unique nature and regulatory requirements. Discretionary accruals were calculated using Dechow *et al.*'s (1995) model. Observations with missing data on the social pillar and discretionary accruals were removed, and the remaining data were matched with the hand-collected data on IR4.0 and corporate governance. The final sample included 232 firm-year observations from 55 firms. To address outliers, observations in the top and bottom one percent of all continuous variables were winsorised to mitigate their relationship.

3.2 Measurement for variables

In this study, we measure SW as the dependent variable using the social pillar score from the Environmental, Social and Governance (ESG) data provided by Refinitiv [1]. The social pillar score from ESG data has been widely used in past studies to represent a company's social relationship on stakeholders, including human rights, labor prices, product safety and quality, customer satisfaction, diversity and inclusion, community relations, and supply chain management (Hassan *et al.*, 2020). The score is calculated as the weighted average of the scores in four areas: workforce (*WORKF*), community (*COMM*), human rights (*HUMAN*), and product responsibility (*PROD*). Social pillar scores ranged from 0 to 100, with higher scores indicating greater social well-being. *SW* represents the overall measure of social well-being that covers all four aspects of the social category. As provided by Refinitiv, we included all categorical measures for the social pillar: *WORKF*, *HUMAN*, *COMM*, and *PROD*.

A company's effectiveness in terms of *WORKF* is determined when an organization provides job satisfaction, a healthy and safe workplace, and maintains diversity, equality, and development opportunities for its workforce. *The WORKF* scores were obtained based on the relative weight calculated from the controversy scores gathered from each company. This includes the number of controversies published in the media linked to workforce diversity and opportunity (e.g. wages, promotion, discrimination, and harassment), the number of controversies published in the media linked to workforce health and safety, the number of controversies published in the media linked to the company's relations with employees or related to wages or wage disputes, and the occurrence of a strike or an industrial dispute that leads to lost working days.

HUMAN measures a company's effectiveness in terms of valuing essential human rights conventions. Similarly, *HUMAN* scores are obtained based on the relative weight calculated from the number of controversies published in the media linked to child labor issues and the number of controversies published in the media linked to human rights issues. Product responsibility, *PROD* scores reflect companies' capacity to produce quality goods and services, integrating customers' health and safety, integrity, and data privacy. The measurement of *HUMAN* is based on the number of controversies published in the media related to consumer complaints or dissatisfaction directly linked to the company's products or services, customer health and safety, employee or customer privacy and integrity, product access, the company's marketing practices, such as over-marketing of unhealthy food to vulnerable consumers, and responsible research and development.

COMM measures a company's responsibility to be a decent citizen by maintaining public health and acknowledging business ethics. The scores are calculated based on the relative weight of the number of controversies published in the media linked to (1) anti-competitive behavior (e.g. anti-trust and monopoly), price-fixing, or kickbacks; (2) business ethics in general, political contributions, or bribery and corruption; (3) patents and intellectual property infringements; (4) activities in critical, undemocratic countries that do not respect fundamental human rights principles; (5) public health or industrial accidents harming the health and safety of third parties (non-employees and non-customers); and (5) tax fraud, parallel imports, or money laundering.

In addition, following Lode *et al.* (2023), information on whether a company has embraced transformation in relation to IR 4.0 was retrieved from the annual report. We created a dummy independent variable *INDREV*, which takes the value of one if the company discloses any information related to the adoption or application of IR 4.0 technologies, otherwise 0. Disclosure on the application of IR 4.0 includes any information on autonomous robots, simulation, cloud, horizontal and vertical system integration, cybersecurity, additive manufacturing, augmented reality, and big data analytics.

Finally, financial reporting quality is an independent variable proxied by low discretionary accruals, which is an adjustment of earnings depending on the manager's decision and serves as an intermediary to estimate the level of manipulation if the account is performed by the organization (Kamarudin *et al.*, 2020; Wan Ismail *et al.*, 2023a; Zarefar *et al.*, 2023). The calculation is based on Dechow *et al.'s* (1995) model.

3.3 Regression model

We estimate equation (1) to investigate the relationship of IR 4.0 and discretionary accruals on the total social well-being score (*SW);* and the sub-elements scores of *WORKF*, *COMM*, *HUMAN*, and *PROD* as presented below:

$$\begin{aligned} SW_{it} = {} & \alpha_0 + \beta_1 INDREV_t + \beta_2 DA_{it} + \beta_3 SIZE_{it} + \beta_4 LEV_{it} + \beta_5 GROWTH_{it} + \beta_6 LIQUID_{it} \\ & + \beta_7 HILIT_{it} + \beta_8 DUALITY + \beta_9 BDSIZE + \beta_{10} BDIND + \beta_{11} ACIND \\ & + \theta_{1-n} Year\ effects + \delta_{1-n} Industry\ effects + \varepsilon_{it} \end{aligned} \tag{1}$$

where *DA* is the absolute discretionary accruals for firm i in year t; *SIZE* is the natural logarithm of firm's total assets; *LEV* is the ratio of total debt to total assets; *GROWTH* is the percentage changes in sales; *LIQUID* is current assets to current liabilities; *HILIT* is the dummy variable with 1 for the firm operating in a high-litigation industry, and 0 otherwise; *DUALITY* is a dummy variable that takes the value of 1 if the *CEO* and chairman are the same person, otherwise 0; *BDSIZE* is the number of board directors; *BDIND* is the number of independent board of directors and *ACIND* is the number of independent audit committees; and other variables are as previously defined.

4. Results and discussions

4.1 Descriptive analysis

Table 1 (Panel A) reports the descriptive analysis. The statistical results for dependent variables show that the maximum values for the independent variables (the social well-being and its sub-elements) are between the range of 96.79 and 99.73, while the minimum values range between 5.17 and 16.17. In addition, the sample shows that the mean for *WORKF* is 61.682. The value is slightly higher than Ting *et al.* (2020) who reported the mean of *WORKF* is 59.12. The mean value of *INDREV* is 0.694, showing that more than half of the companies have disclosed IR 4.0. Meanwhile, the mean for financial reporting quality (i.e. discretionary accruals) is 0.044. In this model, the control variable refers to elements kept consistent or restricted within a research study. While not the focal point of the study's goals, it is managed as it has the potential to the significant results. The control variables' statistical results have revealed that the firm's size has a mean score of 22.127, a maximum of 25.824 and a minimum of 19.455. The other control variable of *LEV* has a mean value of 57.2%, with the highest value of nearly 91.8%. In addition, the mean for *GROWTH* is 1.8%, while the maximum is more than 100% and the minimum is −53.7%.

Variable	Obs.	Mean	Std. Dev.	Min	Max
Panel A: descriptive statistics for all variables					
SW	232	54.156	17.297	16.17	97.470
WORKF	232	61.682	23.545	6.41	99.733
COMM	232	47.456	25.523	5.172	98.773
HUMAN	232	47.641	23.059	15.333	96.791
PROD	232	48.797	26.283	8.257	98.958
INDREV	232	0.694	0.462	0.000	1.000
DA	232	44.00	1.500	3.000	11.60
SIZE	232	22.127	1.384	19.455	25.824
LEV	232	0.572	0.201	0.129	0.918
GROWTH	232	0.018	0.195	−0.537	1.022
LIQUID	232	1.813	1.008	0.419	5.847
HILIT	232	0.078	0.268	0.000	1.000
DUALITY	232	0.065	0.246	0.000	1.000
BDSIZE	232	9.905	2.307	5.000	16.000
BDIND	232	0.482	0.129	0.125	1.000
ACIND	232	0.399	0.109	0.188	0.750

	INDREV = 1 (*N* = 161)		*INDREV* = 0 (*N* = 71)		Diff	
Sample	Mean	SD	Mean	SD	b	*t*-value
Panel B: comparison of means between IR4.0 and non-IR4.0 samples						
SW	58.434	16.575	44.455	14.896	−13.979***	(−6.360)
WORKF	68.004	21.946	47.347	20.691	−20.658***	(−6.878)
COMM	50.113	26.594	41.431	21.910	−8.683*	(−2.600)
HUMAN	51.509	24.032	38.871	17.948	−12.638***	(−4.434)
PROD	50.520	26.661	44.890	25.153	−5.630	(−1.542)
DA	0.044	0.015	0.045	0.015	0.001	(0.294)
SIZE	22.304	1.504	21.727	0.957	−0.577***	(−3.518)
LEV	0.593	0.218	0.526	0.145	−0.067**	(−2.753)
GROWTH	0.021	0.163	0.011	0.253	−0.010	(−0.295)
LIQUID	1.720	0.994	2.025	1.016	0.306*	(2.128)
HILIT	0.050	0.218	0.141	0.350	0.091*	(2.026)
DUALITY	0.087	0.283	0.014	0.119	−0.073**	(−2.765)
BDSIZE	10.286	2.346	9.042	1.974	−1.243***	(−4.166)
BDIND	0.479	0.135	0.487	0.115	0.008	(0.455)
ACIND	0.393	0.108	0.414	0.111	0.021	(1.330)

Note(s): *, ** and *** represent significance at $p < 0.10$, <0.05 and < 0.01, respectively
Source(s): Table created by authors

Table 1.
Descriptive statistics

Table 1 (Panel B) shows that firms with the adoption of IR4.0 technologies have higher mean values of *SOCIAL*, *WORKF*, *COMM*, *HUMAN*, *SIZE*, *LEV*, *DUALITY* and *BDSIZE* as compared to non-IR4.0 firms. Conversely, for *DA*, *LIQUID*, *HILIT*, *BDIND* and *ACIND*, we found lower mean values in IR4.0 firms than non-IR4.0 firms. This is consistent with our expectation that firms which adopt IR4.0 technologies can have higher social well-being. Based on the study by Farrell *et al.* (2021), IR4.0 has a potentially significant association on the workplace and employment. Specifically, they argued that IR4.0 has the potential to significantly related to the future of work, with potential benefits such as increased productivity and efficiency, improved safety, and the development of new products and services. Farrell *et al.* (2021) also suggested that Industry 4.0 could lead to more flexible work arrangements and the development of new types of jobs, which could have positive social

relationship such as increased work-life balance and opportunities for underrepresented groups.

4.2 Correlation analysis

In our correlation analysis, the Pairwise correlation matrix indicates that social well-being, *SW* is correlated with sub-category variables, namely *WORKF*, *COMM*, *HUMAN* and *PROD*. This is expected, since the *SW* is measured as the weighted average of the four sub-elements. The correlation between the SW and the sub-elements is not an issue because they are used interchangeably in the equation estimates. The highest correlation between the dependent variables appears to be between *BDSIZE* and *ACIND* with a value of −0.541, while the correlations between the other dependent variables are relatively low which are below 0.700, indicating no issue of multicollinearity.

4.3 Multiple regression analysis

Table 2 presents the multiple regression results on the relationship of IR 4.0 and financial reporting quality with SW. The results in column (1) show that the coefficient for *INDREV* is positive and significant, suggesting that firms that adopt IR4.0 are associated with a higher

Variable	SW (1)	WORKF (2)	COMM (3)	HUMAN (4)	PROD (5)
Intercept	−24.407	−64.591	41.944	−1.392	−23.181
	(−0.836)	(−1.413)	(0.930)	(−0.030)	(−0.499)
INDREV	7.149***	11.787***	5.244	−0.756	3.807
	(3.112)	(3.278)	(1.478)	(−0.207)	(1.041)
DA	−1.305*	−2.285**	−1.594	0.706	−0.027
	(−1.868)	(−2.090)	(−1.477)	(0.637)	(−0.025)
SIZE	3.407**	5.173**	1.701	1.737	2.392
	(2.581)	(2.504)	(0.835)	(0.829)	(1.138)
LEV	−0.596	23.861*	−35.010***	−10.235	−10.971
	(−0.074)	(1.889)	(−2.809)	(−0.799)	(−0.854)
GROWTH	12.553**	13.991*	21.492**	−4.896	10.269
	(2.326)	(1.656)	(2.579)	(−0.571)	(1.196)
LIQUID	1.058	3.718*	−4.238**	2.235	0.274
	(0.865)	(1.941)	(−2.243)	(1.150)	(0.141)
HILIT	−3.899	−2.085	−26.715***	−9.971	21.933**
	(−0.636)	(−0.217)	(−2.820)	(−1.024)	(2.247)
DUALITY	2.128	−1.516	−18.000**	3.873	32.339***
	(0.433)	(−0.197)	(−2.369)	(0.496)	(4.131)
BDSIZE	−0.946*	−0.701	−1.978**	−0.848	−0.389
	(−1.759)	(−0.833)	(−2.382)	(−0.993)	(−0.455)
BDIND	−2.507	−1.062	−7.016	24.656*	−18.119
	(−0.302)	(−0.082)	(−0.547)	(1.870)	(−1.371)
ACIND	−10.451	−32.517*	29.268*	−34.509*	10.061
	(−0.914)	(−1.817)	(1.658)	(−1.901)	(0.553)
Fixed effects	Included	Included	Included	Included	Included
Adj.R2	0.59	0.46	0.55	0.42	0.55
N	232	232	232	232	232
F-stat	10.285	6.457	8.915	5.647	8.894

Note(s): *, ** and *** represent significance at $p < 0.10$, <0.05 and < 0.01, respectively. *t*-values are reported in parentheses

Source(s): Table created by authors

Table 2. Regression estimates of the relationship of IR 4.0 and financial reporting quality with social well-being

level of social well-being. The coefficient of *DA* is negatively significant, implying that firms with high absolute accruals or low-quality financial reports have a lower level of social well-being. We found similar results in column (2), estimation of *WORKF*, in which a positively significant coefficient for *INDREV* and a negatively significant coefficient for *DA* were concluded. However, the estimations of other sub-elements for *SW,* namely *COMM*, *HUMAN*, and *PROD,* as reported in columns (3), (4), and (5), are not significantly related to *INDREV* and *DA*.

The evidence shows that *INDREV* and *DA* are associated with social well-being, particularly *SW* and *WORKF*. These results imply that companies with higher adoption of IR 4.0 are more likely to provide more information concerning job satisfaction, a healthy and safe workplace, maintaining diversity, equal and development opportunities for its workforce. Consistently, Malik *et al.* (2021) and Sharma *et al.* (2021) found a positive relationship between digital technology from the industrial revolution and society's satisfaction (i.e. job satisfaction or service satisfaction). Nevertheless, our findings indicate that community *(COMM),* human rights *(HUMAN)*, and product responsibility *(PROD),* which are other sub-elements of social well-being, are not significantly related to IR4.0. Furthermore, the results in Table 2 provide evidence that firms with higher discretionary accruals (i.e. low quality of financial reporting) are more likely to provide less information related to social well-being. The findings seem to support the proposition that companies with higher financial reporting quality (i.e. lower discretionary accruals) would have higher disclosures related to *SW* and *WORKF*. In contrast, these findings are inconsistent with those of Souza *et al.* (2020) who did not find evidence of a relationship between social well-being (CSR) and financial reporting quality disclosures.

To the extent that there is a possibility that firms with high *SW* and *WORKF* scores are more likely to disclose IR 4.0, our results may suffer from self-selection bias. To control for possible self-selection bias, we employ Heckman's (1979) two-stage estimation procedure to test for endogeneity. The analysis can be viewed here.

5. Conclusions

In the new economy, businesses in Malaysia need to replace their product and service concepts with more creative and innovative ways such as using digital technology to report quality financial information. Similarly, Malaysia's companies are urged to emphasize the greater promotion of human capital development in achieving an advanced nation. These situations (which are IR 4.0 and financial reporting quality) will eventually affect the social well-being. The *SW* scores together with the sub-elements of *WORKF, COMM, HUMAN*, and *PROD* are examined in this study. The findings indicate that IR 4.0 is most significantly related to the workforce (*WORKF*) category. These results imply that IR 4.0 could have an association with social well-being by ensuring that employees and other stakeholders can enjoy prosperous and fulfilling lives, as well as economic, social, and technological progress, which occurs in harmony with nature, especially in terms of providing job satisfaction, a healthy and safe workplace, maintaining diversity, equality, and development opportunities for its workforce. Furthermore, the results show that firms with lower discretionary accruals (i.e. higher quality of financial reporting) are more likely to provide more information about social well-being.

This study has certain limitations that should be considered. First, the sample size of companies included in the analysis is small, and the study covers a limited period (2013–2017), which may restrict the generalizability of the findings to a broader context. Additionally, the focus on financial reporting quality, IR4.0, and social well-being may overlook other relevant dimensions and factors that could contribute to a more comprehensive understanding of the topic. Furthermore, the measurement of discretionary

accruals used in this study may have inherent limitations owing to the variations in its application among financial reporting scholars. Future research could address these limitations by incorporating larger and more diverse samples, considering a longer timeframe, and exploring additional dimensions of financial reporting quality and social well-being.

Note

1. Previously known as Thompson Reuters ESG scores.

References

Alakrash, H.M. and Abdul Razak, N. (2021), "Technology-based language learning: investigation of digital technology and digital literacy", *Sustainability*, Vol. 13 No. 21, 12304, doi: 10.3390/su132112304.

Anto, L.O. and Yusran, I.N. (2023), "Determinants of the quality of financial reports", *International Journal of Professional Business Review*, Vol. 8 No. 3, pp. 1-40, doi: 10.26668/businessreview/2023.v8i3.1331.

Benzidia, S., Makaoui, N. and Subramanian, N. (2021), "Impact of ambidexterity of blockchain technology and social factors on new product development: a supply chain and Industry 4.0 perspective", *Technological Forecasting and Social Change*, Vol. 169, 120819, doi: 10.1016/j.techfore.2021.120819.

Berman, S.L., Wicks, A.C., Kotha, S. and Jones, T.M. (1999), "Does stakeholder orientation matter? The relationship between stakeholder management models and firm financial performance", *Academy of Management Journal*, Vol. 42 No. 5, pp. 488-506, doi: 10.2307/256972.

Bodie, K. (2002), *Investments*, 6th ed., McGraw−Hill, New York.

Bonilla, S.H., Silva, H.R., Terra da Silva, M., Franco Gonçalves, R. and Sacomano, J.B. (2018), "Industry 4.0 and sustainability implications: a scenario-based analysis of the impacts and challenges", *Sustainability*, Vol. 10 No. 10, pp. 1-24, doi: 10.3390/su10103740.

Chakroun, S., Ben Amar, A. and Ben Amar, A. (2022), "Earnings management, financial performance and the moderating effect of corporate social responsibility: evidence from France", *Management Research Review*, Vol. 45 No. 3, pp. 331-362, doi: 10.1108/mrr-02-2021-0126.

Cirillo, V., Fanti, L., Mina, A. and Ricci, A. (2023), "New digital technologies and firm performance in the Italian economy", *Industry and Innovation*, Vol. 30 No. 1, pp. 159-188, doi: 10.1080/13662716.2022.2055999.

Csiki, O., Demeter, K. and Losonci, D. (2023), "How to improve firm performance? The role of production capabilities and routines", *International Journal of Operations and Production Management*, Vol. 43 No. 13, pp. 1-26, doi: 10.1108/IJOPM-03-2022-0221.

Dechow, P.M., Sloan, R.G. and Sweeney, A.P. (1995), "Causes and consequences of earnings manipulation: an analysis of firms subject to enforcement actions by the SEC", *Contemporary Accounting Research*, Vol. 13 No. 1, pp. 1-36, doi: 10.1111/j.1911-3846.1996.tb00489.x.

Dichev, I.D., Graham, J.R., Harvey, C.R. and Rajgopal, S. (2013), "Earnings quality: evidence from the field", *Journal of Accounting and Economics*, Vol. 56 Nos 2-3, pp. 1-33, doi: 10.1016/j.jacceco.2013.05.004.

Donaldson, T. and Lee, E.P. (1995), "The stakeholder theory of the corporation: concepts, evidence, and implications", *The Academy of Management Review*, Vol. 20 No. 1, pp. 65-91, doi: 10.2307/258887.

Economy Planning Unit (2021), "Rancangan Malaysia Ke-12 2021-2025", available at: https://rmke12.epu.gov.my/bm (accessed 29 January 2023).

ElBannan, M.A. and Farooq, O. (2019), "When are earnings informative? Effect of stock liquidity on value of reported earnings in an emerging market: evidence from Egypt", *International Journal of Islamic and Middle Eastern Finance and Management*, Vol. 12 No. 3, pp. 388-406, doi: 10.1108/IMEFM-08-2018-0270.

Farrell, L., Newman, T. and Corbel, C. (2021), "Literacy and the workplace revolution: a social view of literate work practices in Industry 4.0", *Discourse: Studies in the Cultural Politics of Education*, Vol. 42 No. 6, pp. 1-15, doi: 10.1080/01596306.2020.1753016.

Freeman, R. (1984), *Strategic Management: A Stakeholder Approach*, Ballinger, Boston, MA.

Freudenreich, B., Lüdeke-Freund, F. and Schaltegger, S. (2020), "A stakeholder theory perspective on business models: value creation for sustainability", *Journal of Business Ethics*, Vol. 166 No. 1, pp. 3-18, doi: 10.1007/s10551-019-04112-z.

Gabriel, M. and Pessl, E. (2016), "Industry 4.0 and sustainability impacts: critical discussion of sustainability aspects with a special focus on future of work and ecological consequences", *Annals of the Faculty of Engineering Hunedoara*, Vol. 14 No. 2, pp. 131-136.

Gallab, M., Bouloiz, H., Kebe, S.A. and Tkiouat, M. (2021), "Opportunities and challenges of the industry 4.0 in industrial companies: a survey on Moroccan firms", *Journal of Industrial and Business Economics*, Vol. 48 No. 3, pp. 413-439, doi: 10.1007/s40812-021-00190-1.

Gan, J.L. and Yusof, H.M. (2019), "Industrial revolution 4.0: the human resource practices", *International Journal of Recent Technology and Engineering*, Vol. 8 No. 3, pp. 620-624.

Hassan, M.K., Marimuthu, M. and Zainuddin, Y. (2020), "ESG performance and firm value: the role of corporate social responsibility disclosure", *Sustainability Accounting, Management and Policy Journal*, Vol. 11 No. 2, pp. 414-440.

Heckman, J.J. (1979), "Sample selection bias as a specification error", *Econometrica*, Vol. 47 No. 1, pp. 153-161, doi: 10.2307/1912352.

Hill, J. and Lee, H.H. (2012), "Young generation Y consumers' perceptions of sustainability in the apparel industry", *Journal of Fashion Marketing and Management: An International Journal*, Vol. 16 No. 4, pp. 477-491, doi: 10.1108/13612021211265863.

Hoang, T.C., Abeysekera, I. and Ma, S. (2019), "Earnings quality and corporate social disclosure: the moderating role of state and foreign ownership in Vietnamese listed firms", *Emerging Markets Finance and Trade*, Vol. 55 No. 2, pp. 272-288, doi: 10.1080/1540496x.2018.1521801.

Hohn, M.M. and Durach, C.F. (2021), "Additive manufacturing in the apparel supply chain – impact on supply chain governance and social sustainability", *International Journal of Operations and Production Management*, Vol. 41 No. 7, pp. 1035-1059, doi: 10.1108/ijopm-09-2020-0654.

Hörisch, J., Freeman, R.E. and Schaltegger, S. (2014), "Applying stakeholder theory in sustainability management: links, similarities, dissimilarities, and a conceptual framework", *Organization and Environment*, Vol. 27 No. 4, pp. 328-346, doi: 10.1177/1086026614535786.

Hörisch, J., Schaltegger, S. and Freeman, R.E. (2020), "Integrating stakeholder theory and sustainability accounting: a conceptual synthesis", *Journal of Cleaner Production*, Vol. 275, 124097, doi: 10.1016/j.jclepro.2020.124097.

Ismail, G.M., Huseynov, F., Jain, P.K. and McInish, T.H. (2021), "Brand equity, earnings management, and financial reporting irregularities", *The Review of Corporate Finance Studies*, Vol. 10 No. 2, pp. 402-435, doi: 10.1093/rcfs/cfaa018.

Jiang, D., Li, W., Shen, Y. and Yu, S. (2022), "Does air pollution affect earnings management? Evidence from China", *Pacific-Basin Finance Journal*, Vol. 72, 101737, doi: 10.1016/j.pacfin.2022.101737.

Kamarudin, K.A., Ariff, M.A. and Wan Ismail, W.A. (2020), "Intensity of product market competition, institutional environment and accrual quality", *Pacific Accounting Review*, Vol. 32 No. 3, pp. 391-419, doi: 10.1108/par-10-2018-0083.

Lode, N.A., Wan Ismail, W.A. and Kamarudin, K.A. (2023), "The industrial revolution 4.0, societal well-being and firms performance among Malaysian listed companies", *Journal of Advanced*

Research in Applied Sciences and Engineering Technology, Vol. 33 No. 1, pp. 231-245, doi: 10.37934/araset.33.1.231245.

Malik, A., De Silva, M.T., Budhwar, P. and Srikanth, N.R. (2021), "Elevating talents' experience through innovative artificial intelligence-mediated knowledge sharing: evidence from an IT-multinational enterprise", *Journal of International Management*, Vol. 27 No. 4, 100871, doi: 10.1016/j.intman.2021.100871.

Min, J., Kim, Y., Lee, S., Jang, T.W., Kim, I. and Song, J. (2019), "The fourth industrial revolution and its impact on occupational health and safety, worker's compensation and labor conditions", *Safety and Health at Work*, Vol. 10 No. 4, pp. 400-408, doi: 10.1016/j.shaw.2019.09.005.

Mourtzis, D., Angelopoulos, J. and Panopoulos, N. (2022), "A literature review of the challenges and opportunities of the transition from industry 4.0 to society 5.0", *Energies*, Vol. 15 No. 17, p. 6276, doi: 10.3390/en15176276.

Muraina, S.A. and Dandago, K.I. (2020), "Effects of implementation of international public sector accounting standards on Nigeria's financial reporting quality", *International Journal of Public Sector Management*, Vol. 33 Nos 2/3, pp. 323-338, doi: 10.1108/IJPSM-12-2018-0277.

Murphy, K., Ruggiero, E.D., Upshur, R., Willison, D.J., Malhotra, N., Cai, J.C. and Gibson, J. (2021), "Artificial intelligence for good health: a scoping review of the ethics literature", *BMC Medical Ethics*, Vol. 22 No. 1, pp. 1-17.

Nagy, J., Oláh, J., Erdei, E., Máté, D. and Popp, J. (2018), "The role and impact of Industry 4.0 and the internet of things on the business strategy of the value chain – the case of Hungary", *Sustainability*, Vol. 10 No. 10, pp. 1-25, doi: 10.3390/su10103491.

Sharma, S.K., Metri, B., Dwivedi, Y.K. and Rana, N.P. (2021), "Challenges common service centers (CSCs) face in delivering e-government services in rural India", *Government Information Quarterly*, Vol. 38 No. 2, 101573, doi: 10.1016/j.giq.2021.101573.

Sima, V., Gheorghe, I.G., Subić, J. and Nancu, D. (2020), "Influences of the industry 4.0 revolution on the human capital development and consumer behavior: a systematic review", *Sustainability*, Vol. 12 No. 10, pp. 1-28, doi: 10.3390/su12104035.

Souza, J.A.S.D., Flach, L., Borba, J.A. and Broietti, C. (2020), "Financial reporting quality and sustainability information disclosure in Brazil", *BBR. Brazilian Business Review*, Vol. 16, pp. 555-575.

Srinidhi, B., Gul, F.A. and Tsui, J. (2011), "Female directors and earnings quality", *Contemporary Accounting Research*, Vol. 28 No. 5, pp. 1610-1644, doi: 10.1111/j.1911-3846.2011.01071.x.

Sustainability Accounting Standard Board (2013), "Conceptual framework", available at: https://www.sasb.org/wp-content/uploads/2020/02/SASB_Conceptual-Framework_WATERMARK.pdf (accessed 23 September 2021).

Ting, I.W.K., Azizan, N.A., Bhaskaran, R.K. and Sukumaran, S.K. (2020), "Corporate social performance and firm performance: comparative study among developed and emerging market firms", *Sustainability*, Vol. 12 No. 26, pp. 1-21, doi: 10.3390/su12010026.

Torelli, R., Balluchi, F. and Furlotti, K. (2020), "The materiality assessment and stakeholder engagement: a content analysis of sustainability reports", *Corporate Social Responsibility and Environmental Management*, Vol. 27 No. 2, pp. 470-484, doi: 10.1002/csr.1813.

Türegün, N. (2019), "Impact of technology in financial reporting: the case of Amazon Go", *Journal of Corporate Accounting and Finance*, Vol. 30 No. 3, pp. 90-95, doi: 10.1002/jcaf.22394.

United Nations (2015), *The Sustainable Development*, available at: https://www.un.org/sustainabledevelopment/development-agenda-retired/page/2/ (accessed 24 September 2021).

Uribe, D.F., Ortiz-Marcos, I. and Uruburu, Á. (2018), "What is going on with stakeholder theory in project management literature? A symbiotic relationship for sustainability", *Sustainability*, Vol. 10 No. 4, pp. 1-23, doi: 10.3390/su10041300.

Wan Ismail, W.A., Ariff, M.A., Kamarudin, K.A. and Mohd Adnan, N.S. (2023a), "Financial reporting quality during COVID-19 pandemic: international evidence", *Asian Academy of Management Journal of Accounting and Finance*, Vol. 19 No. 2, pp. 161-196, doi: 10.21315/aamjaf2023.19.2.6.

Wan Ismail, W.A., Kamarudin, K.A., Ariff, A.M. and Wan Hussin, W.N. (2023b), "Women on board, strength of auditing and reporting standards, and analysts' forecasts accuracy", *Journal of Applied Accounting Research*, Vol. 24 No. 2, pp. 380-402, doi: 10.1108/jaar-02-2022-0029.

Warren, J.D., Moffitt, K.C. and Byrnes, P. (2015), "How big data will change accounting", *Accounting Horizons*, Vol. 29 No. 2, pp. 397-407, doi: 10.2308/acch-51069.

Yang, M. and Tang, W. (2022), "Air pollution, political costs, and earnings management", *Emerging Markets Review*, Vol. 51, 100867, doi: 10.1016/j.ememar.2021.100867.

Zarefar, A., Azmi, N.A., Wan Ismail, W.A. and Kamarudin, K.A. (2023), "The moderating effect of political connection on the relationship between non-audit services and accounting quality: evidence from an emerging market", *Cogent Economics and Finance*, Vol. 11 No. 1, 2175457, doi: 10.1080/23322039.2023.2175457.

Further reading

Harymawan, I., Nasih, M., Rayahu, N.K., Kamarudin, K.A. and Wan Ismail, W.A. (2022), "Busy CEOs and financial reporting quality: evidence from Indonesia", *Asian Review of Accounting*, Vol. 30 No. 3, pp. 314-337, doi: 10.1108/ara-11-2021-0203.

About the authors

Wan Adibah Wan Ismail is Associate Professor at Universiti Teknologi MARA, Merbok, Malaysia. She obtained her Ph.D. in Accounting from Victoria University of Wellington, New Zealand. In addition, she holds a professional qualification from the Chartered Institute of Management Accountants (CIMA), United Kingdom. Her research interests encompass financial reporting, specifically focusing on earnings quality, earnings management, corporate governance, auditing and corporate ownership. Her work has been published in reputable peer-reviewed accounting journals, including the *International Journal of Auditing, Managerial Auditing Journal, Pacific Accounting Review, Journal of Applied Accounting Research, Accounting Research Journal, Asian Review of Accounting, Journal of Islamic Accounting and Business Research and Journal of Financial Reporting and Accounting*.

Marziana Madah Marzuki is Associate Professor at Universiti Teknologi MARA in Machang, Malaysia. She earned her Ph.D. from Universiti Sains Malaysia in Penang, Malaysia. Her research focuses primarily on financial reporting and corporate governance. Her scholarly work has appeared in esteemed journals such as the *Journal of Contemporary Accounting and Economics, Pacific Accounting Review, Social Responsibility Journal, Accounting Research Journal, Asian Review of Accounting and Journal of Islamic Accounting and Business Research*. Her publications cover a wide range of topics including corporate governance, tax aggressiveness, cooperative sustainability, conservatism, audit quality, board diversity and fraudulent reporting.

Nor Asma Lode, Associate Professor at Universiti Utara Malaysia, earned her Ph.D. from the University of London, United Kingdom. She also holds a Master of Arts in Accounting and Finance from Lancaster University, United Kingdom. With over 20 years of experience in teaching and research, she has contributed extensively to her field. Her research findings have been published in esteemed journals such as the *Malaysian Management Journal, Jurnal Pengurusan, Malaysian Accounting Review, Asian Academy of Management Journal and Journal of Business Management and Accounting*. Her research interests revolve around financial accounting and reporting disclosures, accounting standards, value relevance, corporate governance and Islamic accounting. Nor Asma Lode is the corresponding author and can be contacted at: asma@uum.edu.my