Role of Technology Director in Boosting Internationalization and Performance: An Evidence from EU Sustainable Firms

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Abstract

This paper investigates the relationship between technology director, internationalisation, and firm performance, assuming the beneficial effect of digital-sustainable corporate governance reforms. To deal with the indicated issues, the boards require a particular functioning role of the technology director that ensures effective digitalisation within and among the competitive firms to attain high performance. For this reason, we implied the presence of a technology director on board and empirically examined its impact on firm performance. In addition, we also test business internationalisation as a mediator between the technology director on board and firm performance. The empirical findings rely on the data retrieved from the S&P Dow Jones Sustainability Index 2019 for 115 top sustainable EU firms and the Thomson Reuters Refinitiv Eikon database. The findings reveal a significant positive relationship between the technology director's presence on board and firm performance. We also find business internationalisation mediates the relationship between the technology director presence on board and firm performance. Nowadays, digitalisation and sustainability are becoming key factors for a firm's functionality and competitiveness in the economic world. To lead in the competitive environment, digital transformations, awareness, and application have become a challenge for firms. In the present study, we try to lay a foundation for a digitally aware board and its impact on important firm decisions.

Keywords: Digitalization, Sustainability, firm Internationalisation, Technology Director, CEO, Chief Digital officer

1 Introduction

We have observed an inspiring debate on digitalisation and sustainable business development recently. The interest of academicians, practitioners, and policymakers is on the rise, and indeed we also spot the heated discussion on mentioned trends in most strategic and political agendas (Kiron and Unruh, 2018). While interconnecting digitalisation trends and sustainable development, it is believed that the firms acquire the high-end contributions of the board and management. It helps to facilitate digitalisation in company operations and higher echelons in the tumultuous and highly uncertain business world (Becker *et al.*, 2018). This digital implementation can, thus, be linked to attaining sustainable performances in the long run (Vial, 2019).

Digitalisation is a "trend" bringing changes in society and business (Tihinen *et al.*, 2016) and has had a significant impact on the industrial revolution (Degryse, 2016; Hossnofsky and Junge, 2019; Parviainen *et al.*, 2017; Teece and Linden, 2017; Tihinen *et al.*, 2016). In business, digital technologies are applied to update business models, and generate new revenue and value-creating opportunities (Gartner, 2018; Kreiss and Brennen, 2014). The recent business upgrade and growth reveal the application of digitalisation in numerous ways, such as the internet (Lyytinen and Rose, 2003), software (Setia *et al.*, 2013), blockchain (Glaser, 2017), social (Li *et al.*, 2018), mobile (Pousttchi *et al.*, 2015), analytics (Dürr *et al.*, 2017), cloud (Clohessy *et al.*, 2017), and the internet of things-IoT (Richter *et al.*, 2017). These encourage businesses to rethink their core competencies, supplement their abilities, and build the capacity to convert knowledge into new expertise as part of this revolution (Knippenberg *et al.*, 2015). Such an application of Smart technologies significantly impacts essential corporate processes beyond increasing efficiency and efficacy.

In addition, the constant pressure enforced by the shareholders and the society urges management to turn towards sustainability and promote it in their practices within the firm to raise its value (Isensee *et al.*, 2020). As a result, the firms are increasingly adopting digitalisation tools as a sustainable tactic proposed by upper management (Ordieres-Meré *et al.*, 2020). It thereby establishes new foundations for economic growth. Furthermore, we see firms using digitalisation to gain sustainable developments and actively perform internationalisation. Digitalisation becomes even more apparent when firms are consumer-focused and demand

international operations (Plėta *et al.*, 2020). Digitalisation has gradually been identified as the main antecedent and important component of internationalisation in research (Joensuu-Salo et al., 2018; Kotha et al., 2001). Great digital innovations have transformed the work environment and reconfigured international strategies in the recent decade, facilitating firms in reducing transaction costs, favouring communication, carrying out information exchanges and integration among different stakeholders to reduce distances, support the emergence of synergies (Alarcón-del-Amo et al. 2018; Kim et al. 2018; Özcan et al. 2018; Chen and Kamal 2016); Strange and Zucchella 2017). In addition, with digitalization, it has become easier to identify new market opportunities and access to information and resources in foreign countries (Coviello et al., 2017).

Such engagements and strategic decisions require the high-end services of the firm's board. The impact of the board on the conduct of a company is a very productive field of investigation (Deutsch, 2005). The literature discusses the significance of the connection between the board of directors and outcomes (Demb and Neubauer, 1992; Kiel and Nicholson, 2005; Westphal and Bednar, 2005), leading to the conclusion that board efficiency plays a great part in deciding the future firm development in the time ahead (Bird et al., 2004: 132). Literature shows few but influential studies. These studies indicate the digital board awareness and their contribution towards establishing digitalisation in the business and, after that, boosting the long-term sustainable performance and the business internationalisation (Giebe, 2019; Hendricks *et al.*, 2019; Hess *et al.*, 2016; Neely *et al.*, 2020; Ordieres-Meré *et al.*, 2020; Velinov *et al.*, 2020). Henceforth, it establishes the associations of the board in building sustainable development and performing internationalisation.

From the abovementioned debate, we arrive at a point where it has become evident that firms, to move towards digitalised business, must experience a huge socio-technical change that affects organisational structures, strategy, IT systems, methodologies, and business models (Legner *et al.*, 2017). One of the significant indicators to go digital and attain the desired value creation is the "digital board," which means updating the digital skills set among the board (Horlacher, 2016; Legner *et al.*, 2017). Also, to achieve sustainability in the digital era, the firms require the high-end contribution of their board. Therefore, a digitally aware board is more likely to attain the desired value creation in the digital era. Henceforth, in this study, we

aim to ***address the digitally aware board implication on the firm performance through business internationalisation in the EU sustainable firms***.

Technological advancements such as digitalisation and forming the European Union as a single market has allowed firms to operate internationally. Over the last one-decade, European Union and European Commission have pushed the European firms to adopt sustainable practices by adapting the ESG framework in their policies. This action can be observed through the Corporate Social Responsibility" strategy and the "Non-Financial Reporting Directive" (NFRD) (European Union, 2014). The implementation of NFRD has pushed European firms to adopt the ESG framework and provide information related to firm activities related to environment and social aspects. Furthermore, the adaption of the digital framework has allowed firms to operate efficiently overseas with a technology director on board.

To empirically examine the role of a digitally aware board, we use the presence of technology directors (PTD) as an indicator of sustainable firms and their influence on firm performance (FP). In addition, we use it in the mediating effect to find if the business internationalisation (BI) influences the direct relationship between PTD and FP. We find a significant and positive relationship between PTD and FP. Moreover, we also find that BI mediates the direct relationship between PTD and FP. In the present research, we try to serve as a foundation for studying the associations. However, future studies should add to the body of knowledge and expand the model with a higher sample size and considerable additional attributes that may serve the purpose for the firms to be more sustainable, digitalised and attain high performance in the competitive world.

The paper is structured as follows. The following section provides the literature review and hypothesis development. Section 2 explains the methodology, sample selection and analysis. Sections 3 and 4 provide the results and discussion, followed by section 5 of the conclusion, limitations, and future research avenues.

1.1 Literature Review and Hypothesis Development

1.1.1 Sustainability and Digitalisation

The emerging concept of sustainability and the changes towards digitalisation given by nowadays technical transformation appear to go hand in hand in being among the most influential factors in nowadays business scenario. Digitalisation opens new options and paths

for shaping the future of communal living. It now impacts practically every area of our lives. The seemingly unending worldwide flow of digital information has not only altered our economy but has also given rise to a plethora of new possibilities. The Internet of Things, Big Data, and digital advancements are part of a significant digital movement. While this growth presents several exciting prospects, it also poses critical challenges. One of these critical challenges concerns whether we can achieve sustainable digitalisation. Numerous issues ahead of us must be actively and fully addressed in this sense.

Speaking about sustainable business developments, one may raise the question, how does digitalisation interconnect with sustainability? To address the question, we require some diggings. Such as, unlike traditional business – where, in firms, there is an information technology (IT) strategy – the digitalisation of the modern era brings interconnections with all the aspects of business-like products, processes, and services. It transcends the traditional business functional areas, for example, marketing, logistics, finance, and human resource (Bharadwaj *et al.*, 2013). Moreover, besides just the "bits and bytes," according to Hagel et al. (2011), the digital infrastructure consists of organisations, practices, and protocols that together organise and convey the expanding power of digital technology to business and society". As a result, it is no longer possible to separate digital and sustainability trends. We indeed think that doing business through the lens of sustainability, aided by digital technology, helps businesses create value for their customers, society, and the environment.

While digitisation is fast changing our society, lawmakers and diplomats from many countries have agreed on a shared political vision for a more sustainable future (Osburg and Lohrmann, 2017). We have also observed the 17 Sustainable Development Goals (SDGs) proclaimed by the United Nations as the foundation for the 2030 Agenda for Sustainable Development (UN, 2017). One of the goals takes on new meaning as it asks for resilient infrastructure, supports inclusive and sustainable industrialisation, and encourages innovation. Along with the involvement of the UN and governmental institutions across countries, the scientific community is also playing a critical role in creating alternatives, spreading it through their work to the community, and continuing its support research in this critical area. Furthermore, digitalisation endures consequences for transparency and accountability and creates ways to shape, monitor, and manage sustainability. Both megatrends, sustainability and digitalisation,

impose enormous changes in the world. Hence, we observe that digital transformation will fundamentally change our society's structure.

Businesses and industries are undergoing significant transformations that will result in digitalised corporate operations (Li *et al.*, 2018). Indeed, these transformations come with significant hurdles while making necessary changes (Kallinikos *et al.*, 2013; Yoo *et al.*, 2012). The transformation requires businesses to develop new strategies and digitalise all aspects from management to operations (Chuang and Lin, 2015; Sia *et al.*, 2016).

Why are businesses moving towards a massive digitalisation process besides attaining higher values, profits, and performance? The answer lies, in our opinion, also in sustainability. We can observe that these processes have recently taken place to reach out to the community. Apart from personal benefit, businesses are reaching out to ecosystems and providing services to them, whether social, economic, or environmental, collectively being balled sustainable development.

1.1.2 Firms Sustainable Development and Digitalization in the modern era

The convergence of digitalisation and sustainability in business and society presents managers with a range of opportunities and obstacles, both inside and across organisations. When applied in the right context, digital technologies have revolutionary potential, allowing a company to discover new ways to create value internally and along the value chain (Vial, 2019). Sustainability can be an effective instrument for businesses to win stakeholder trust and establish a positive reputation (Fanasch, 2019) and success (Ching *et al.*, 2017). It is the incorporation of the social and environmental aspects of the firm (Marrewijk and Marco, 2003). Therefore, firms must create an optimal approach to attain their environmental, social, and economic performance (Lee *et al.*, 2016) to generate market value (Al-Hiyari and Kolsi, 2021). As a result, businesses seeking long-term viability should focus on innovation and digitalisation. To perform as sustainable, firms consider digital tools such as clean technologies, green production processes, and mapping their environmental footprints. In synthesis, they should be sustainable and the digitalised attributes, serving both internal and external stakeholders, thus helping firms expand and attain higher performance.

1.1.3 Digitally aware board

The ability of managers to deal with digitality is one of the factors that define organisations' strategies in the digital era (Sawy *et al.*, 2016). Compared to technological challenges,

managerial strategy, culture, and skills training are focus issues on digitalisation. As a result, managers who support the creation and execution of digitality and those who can transition to digitality as an organisational culture are required to drive enterprises toward employing digitality (Chuang and Lin, 2015). One of the controls that help managers to recognise dangers and opportunities better is knowledge. As a result, having a good understanding of digital technologies and having a digital business plan can assist managers in proactively identifying risks and finding solutions to those risks (Xue, 2014). In addition, in the digital environment, digital abilities must be developed. As a result, a strong understanding of digitalisation management is required (Sia *et al.*, 2016).

Firms' board decides to educate and respond to digitalisation and artificial intelligence practices to address the above concerns. Moreover, firms encourage and equip their boards to take high-risk and impactful decisions in unpredictable scenarios because of increased customer expectations, market situation, and updating government rules and regulations (Petrenko *et al.*, 2019; Pogodina *et al.*, 2019). As a result, the boards advocate and implement hiring policies that need incoming executives to have digital and Information Technologies capabilities, which will assist them in making high-risk strategic decisions (bin Nasir, 2019; Vallone *et al.*, 2019).

1.1.4 Recent development in the digitally aware board, performance, and internationalisation

Managers have a substantial influence on corporate strategies and performance, according to researchers, because of their decision-making power and leadership (Fayyaz *et al.*, 2021; Finkelstein *et al.*, 1996; Hambrick, 2007). However, these executives face a unique challenge: ensuring their company's competitiveness by developing and implementing a business strategy that considers the benefits and threats of the digital transformation (Hess *et al.*, 2016).

A closer examination of the academic literature reveals that research examining the antecedents and effects of managers' qualities and behaviours has seldom examined digitalisation issues. For example, CEO duality might boost digitalisation among the board and firm (Hambrick, 2007). Firms hire Chief digital or chief information officers to ensure how they can guide them in digital transformation (Hendricks *et al.*, 2019; Neely *et al.*, 2020). Firms are attempting to focus on long-term sustainability through investments in human capital and digitalisation, facilitating business transformation. Simultaneously, the companies engage leaders who function as digitalisation drivers and promoters, increasing investor interest and making the

company appealing to the domestic and international markets (Velinov *et al.*, 2020). Prior studies on the role of CDOs and Internationalisation have shown that having digitalisation knowledge and expertise helps the business reach out to prospective investors across countries and become more international (Giebe, 2019). Additionally, businesses worldwide exert a monumental push to enhance firm internationalisation and sustainability through green digitalisation tools, introduced by senior management as innovative business models (Ordieres-Meré *et al.*, 2020).

Contrarily, the continuous trend of globalisation has significantly altered the corporate environment. As the limits of today's corporate world become more global, organisations are being urged to build a dominating worldwide presence. Because of this, businesses must have functional boards to make good decisions about expanding internationally (Nicholson and Kiel, 2004). The preliminary studies show that the board plays a remarkable role in digitalisation and helps the firms go for internationalisation and attain long-term sustainable performance. Therefore, these studies highlight the significance of the study's issue and provide reference points for further board analysis in firms' digitalisation. Therefore, with reference literature stated above, we propose the following hypothesis.

H_1: The presence of a technology director on board has a significant positive impact on firm performance and business internationalisation.

H_2: Business Internationalization mediates the relationship between the presence of a technology director on board with firm performance.

2 Methods and Data

2.1 Data and Sample

We used top sustainable European Union firms based on S&P Dow Jones Sustainability Index (DJSI) to address our concern. The sample relies only on non-financial sustainable firms, as the corporate governance regulations vary for financial and non-financial sectors. Since 1999, RobecoSAM and S&P Dow Jones Indices have gained popularity for evaluating firms' sustainability and ESG practices. They publish the yearly DJSI indicating top performers of the market. The extant studies have widely used DJSI in the last decade to gauge firm sustainable practices and environmental disclosure (Hawn *et al.*, 2018; Michelon and Parbonetti, 2012). A

total of 149 firms attained the sustainable title across the EU. The financial firms were excluded from the study sample, as the practices and corporate governance regulations are different from those of others. The final sample comprised 115 non-financial top sustainable EU firms for 2019. Firm financial and governance-related data was gathered through the Thomson Reuters Refinitiv Eikon database. The sample distribution concerning industry and country (See Tables 1 and 2).

Table 1: Sample Industry classification

Sr	Industry	No. of firms
1	Capital Goods	18
2	Materials	13
3	Food, Beverage & Tobacco	8
4	Utilities	8
5	Commercial and Professional Services	7
6	Energy	6
7	Automobiles & Components	5
8	Consumer Durables & Apparel	5
9	Media & Entertainment	5
10	Telecommunication Services	5
11	Transportation	5
12	Health Care Equipment & Services	4
13	Pharmaceuticals, Biotechnology & Life Sciences	4
14	Retailing	4
15	Software & Services	4
16	Consumer Services	3
17	Food & Staples Retailing	3
18	Household & Personal Products	3
19	Semiconductors	2
20	Technology Hardware & Equipment	2
21	Engineering	1
	Total	**115**

Source: S&P Dow Jones Sustainability Index 2019

Table 2: Sample Country classification

Sr	Country	No. of Firms
1	France	24
2	UK	23
3	Germany	12
4	Netherlands	10
5	Spain	10
6	Switzerland	9
7	Italy	7
8	Finland	6
9	Sweden	5
10	Denmark	2
11	Ireland	2
12	Norway	2
13	Portugal	2
14	Belgium	1
	Total	**115**

Source: S&P Dow Jones Sustainability Index 2019

2.2 Measures

We use the following measures to test the established conceptual framework and build on the sustainable digitalisation carried by the firms to attain high internationalisation and performance.

Presence of Technology Director (PTD): To capture IT and digitalisation knowledge on board, we select a director dealing with digital technology and innovation of the firm. We emphasised if a specific designation is given to a member to head digitalisation and innovation on board. If the PTD is there =1, otherwise 0. We collect this information from each firm's annual report, corporate governance report, board member profiles and finally from the firm's integrated report of the selected year.

Firm performance: To measure firm performance study employs Tobin Q as the outcome variable.

Business Internationalisation: Since we use internationalised firms in the sample. The level of business internationalisation is measured as the ratio of foreign sales to total sales (Joensuu-Salo *et al.*, 2018).

We also control variables firm size, the board size, board independence, CEO tenure, and CEO duality, which can influence results. The summary of all variables (See Table 3).

Table 3: Variable description

Variable name	Measurement
Dependent variable	
Firm performance	TobinQ
Independent variable	
Presence of technology director	A binary variable which takes value 1 if the head digitalisation and innovation is on board and 0 otherwise
Mediator	
Business Internationalisation	The ratio of foreign sales to total sales
Controls	
Firm size	The natural log of total assets
Board size	Total number of directors on governance board
Board independence	Percentage of Independent directors to total directors
CEO tenure	Duration of CEO on board
CEO duality	A binary variable which takes the value of 1 if the CEO of the company is also the chairperson of the governance board and 0 otherwise

Source: Refinitiv Eikon

3. Results

The descriptive statistic shows the average mean value for the presence of director technology (PDT) on board is 78.2%. On average, the firm size is $7.40 million. The mean value for business internationalisation in sampled firms is 87.7%. Lastly, for firm performance, the average mean value is 92.3%. In addition, to be sure about multicollinearity problems among explanatory variables, we run variance inflation factor (VIF) estimation. To have no multicollinearity among explanatory variables, the VIF value must stand below 10 (Gujarati and Porter, 1995). According to Diamantopoulos and Siguaw (2006), a VIF value lower than 3.33 indicates no multicollinearity. In line with the literature, the relatively low VIF values represent no multicollinearity issues in our study (see Table 4). The descriptive summary and correlations (see Table 4).

Table 4: Descriptive and Correlation

		Mean	SD.	VIF	1	2	3	4	5	6	
1	PTD	0.782	0.414	1.01	1						
2	CEO Tenure	6.930	7.074	1.08	0.009	1					
3	CEO_Duality	0.200	0.401	1.19	-0.060	0.239	1				
4	Board Size	10.556	4.024	1.32	-0.092	-0.01	0.260	1			
5	Board Independence	6.382	2.934	1.24	-0.029	0.014	0.024	0.400	1		
6	Firm size	7.403	0.673	1.18	-0.045	-0.043	0.002	0.100	-0.013	1	
7	Performance	0.923	0.761	-	0.180***	0.069	-0.183*	-0.029	0.198**	-0.205*	1
8	Business Internationalization	0.877	0.614	1.22	0.047***	-0.015	-0.122*	0.005	0.145*	-0.369*	0.1
	***p<0.001, **p<0.01, *p<0.05.										

We applied the ordinary least square regression to test the presence of technology director relationship with firm performance and the mediating effect of business internationalisation in the EU sustainable firms. Table 5 indicates the regression analysis. We proposed that the presence of a technology director (PTD) is positively related to firm performance (PERF). Results indicate a statistically significant positive relationship **(β=0.131, p<0.001)**. Similarly, we proposed that presence of a technology director (PTD) has a positive impact on business internationalisation. The results appeared to be in line as predicted (**β=0.263, p<0.001)**. Table 6 depicts standardised direct and total effects to explain our hypothesis under mediation analysis. We checked the relationship between the PTD (explanatory) and performance (outcome) in the pre-mediation analysis. And the total effect is significantly positive **(β=0.130, p<0.001)**. Further, table 6 reports the mediation analysis. It shows business internationalisation partially mediates the relationship between PTD and performance. To confirm the presence of mediation, we performed the Sobol and Arorian Test of mediation, as shown in Table 6. Both tests confirm the presence of mediation analysis.

Table 5: Regression Analysis

	Internationalisation		Firm Performance	
PTD		0.263***		0.131***
		(0.105)		(0.035)
Firm Size	-0.216*	-.210*	-0.181*	-0.154
	(0.126)	(0.124)	(0.104)	(0.099)
Board Size	-0.008	-0.005	-0.022	-0.020
	(0.180)	(0.178)	(0.015)	(0.014)
Board	0.005***	0.004***	0.004*	0.004***
Independence	(0.001)	(0.001)	(0.002)	(0.001)
CEO Tenure	0.012	0.117	0.011	0.011
	(0.010)	(0.010)	(0.010)	(0.010)
CEO Duality	-0.379***	-0.365***	-0.313**	0.687***
	(0.132)	(0.132)	(0.139)	(0.279)
Constant	2.342***	2.029***	2.31**	6.880***
	(0.941)	(0.934)	(0.965)	(2.117)
R^2	0.381***	0.401***	0.419***	0.497***

***p<0.001, **p<0.01, *p<0.05.
Standard errors are in parentheses

Table 6: Mediation Analysis

Total Effect			Direct Effect		
Path	**Coefficient**	**S. E**	**Path**	**Coefficient**	**SE.**
$PTD \rightarrow PERF$	0.130***	0.034	$PTD \rightarrow BINT \rightarrow PERF$	0.111***	0.037

Test	**Test Satistics**	**S.E**
Sobol Test	2.201***	0.011
Arorian Test	2.166***	0.011

***p<0.001, **p<0.01, *p<0.05.

4. Discussion

We find that the presence of a technology director (PTD) onboard significantly positively impacts the firm performance and business internationalisation (BINT) of the top EU sustainable firms. The results indicate that the role of technology directors plays its part in increasing firm performance and boosting the internationalisation process. While adapting the digitalisation practices, we observed that sustainable firms go international through expansions,

investments, and sales and tend to improve their performance. This advancement is brought into action through the services of the designated director, in our case, the PTD. We find that having a technology director on the board stimulates the process of sustainable digitalisation in firms through internationalisation and, in turn, impacts the firm performance.

Moreover, prior studies pose that business internationalisation has influenced firm performance in multiple ways (Lu and Beamish, 2001, 2006; Pangarkar, 2008; Ruigrok and Wagner, 2003). We, therefore, posit that the relationship between the PTD and performance further comprehends business internationalisation. Therefore, we insert business internationalisation as the mediator between the PTD and performance in the EU sustainable firms. To meet the criteria of Baron and Kenny (1986) mediation conditions, the explanatory variable influence on the outcome and mediator needs to be satisfied. Since the study results fulfil the criteria, we found partial mediation of business internationalisation between the presence of a technology director (PTD) and the firm's performance.

Our research results indicate that the board of directors, especially the one hired only to deal with the technology decisions, tends to play a remarkable role in the process of digitalisation, helping the digitalised firms to extend their business internationalisation and to improve their long-term sustainable performance. We observe that PTD enforces a positive impact on firm performance. In other words, it depicts that a director in the board positing the ability to deal with the digitality is one of the factors defining organisation strategies in the digital era (sawy et al. 2016) and boosting its performance. Within the sustainable firm’s setup, we see that firms considering updating their board’s digital ability and hiring a technology director tend to go more towards business internationalisation and further enhancing the firm performance.

5. Conclusion, Limitations and Future Research Avenues

5.1 Conclusion

Digitalisation might go hand in hand with firms' sustainability. Firms are continuously working to be in the race to be sustainable. Such an effort is made to serve the purpose of both internal (value-creation, performance) and external (fulfil of social, economic, and environmental purpose) stakeholders. One factor contributing to this effort is to adapt digitalisation in possible ways to enhance sustainability. This strategic decision-making requires the high-end contributions of the board. Firms that can organise their boards to attain more sustainable

digitalisation have the scope for more expansion, internationalisation, and improved performances.

We investigated the presence of a digital technology director on the boards of top European sustainable firms and their impact on firm Internationalisation and performance. From the study results, we support that, nowadays, boards that hire digital technology directors to deal with the technology, digitalisation, and innovation decisions are more efficient in business internationalisation and improved firm performance. Being the meta driver in this digital era scenario, sustainability has become able to boost the firm growth path like digitalisation, internationalisation, and performance. For the first time, our study has tried to combine the role of the digital technology director, business internationalisation, and firm performance in the EU sustainable performing firms. The findings support the positive connection. The study's contributions and implications are threefold. First, it contributes to the theoretical body of knowledge by establishing a conceptual framework to include the technology director's presence and their influence on the performance with sustainability. According to the experts, board members are a critical contextual component that can affect a firm's internationalisation-performance decisions (Hennart, 2007). Second, it bridges the relationship with the mediation of business internationalisation. It manifests that firms attaining digitalisation and sustainability simultaneously are also using the business internationalisation tact to boost their drivers further and compete in the market. Lastly, it calls the boards to dedicate specific roles to perform. For example, hiring a director on board with a role specifically involved in technology and digital developments to achieve sustainability intensifies the firm performance.

5.2 Limitations and future research avenues

Firstly, our sample includes 115 non-financial EU top sustainable performed firms for 2019, considering our limitation. For future research, we invite the researchers to perform a comprehensive study on the said framework by the expansion of sample size, the knowledge and skill set of the technology director, and their other contributing personal attributes that can play a part in boosting the digitalisation process in the firm and outside and to attain higher performances also becoming more sustainable. Moreover, we also invite researchers to include other TMT members, their attributes, and roles in firms to attain higher coaction with internationalisation and performance in the present digitalised sustainable era. Secondly, the subject of the present study included only the top-performing sustainable firms of Europe in

different sectors, excluding financials qualifying for sustainability rankings in the year 2019. Future researchers are recommended to study the framework either on tech-based firms which are constantly competing, innovative, more digitalised, and ready to go international to boost their performance or to take into account a comparative study by including cross-country analysis. Lastly, the present study suffers from the fact that data comprised of 1 year; we recommend future researchers overcome the limitation by using longitudinal data.

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