TECHNOLOGY ABSORPTION CAPABILITY KEY DETERMINANTS OF SUSTAINABLE GLOBAL ENTREPRENEURSHIP START-UPS

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ABSTRACT

In the industrial era, the rapid increase of entrepreneurial start-ups in the global economy help to create new jobs and economic growth in Indonesia. However, their sustainability is still facing a lot of obstacles and challenges. Therefore, this study, aims to explain the main determinants of sustainable global entrepreneurial start-ups. Data were analyzed using the Global Entrepreneurship Index (GEI) and the multiple correlation-regression experimental as well as the path analysis model. The results showed that technology absorption, human capital, and competition are the three main determinants for building sustainable start-ups and driving the success of global entrepreneurial competitiveness. Meanwhile, the absence of these factors bring about difficulties in attitudes, abilities, and aspirations to achieve successful competitive performance. These determinants providerecommendations and implications for government policies to participate in building and promoting global sustainable entrepreneurial start-ups through the triple helix model.

Keywords: Technology Absorption, Human Capital, Competition, And Global Entrepreneurial Start-Ups

JEL Classifications: F60, L31, M13, O14, Q01

INTRODUCTION

In the industrial era, society develop interest in sustainable entrepreneurial start-up because it help to creates new job opportunities as well as economic growth. Meanwhile, in Europe, Romania, and Korea, this innovation helpsin developing the country's economy (Wallin, 2015; Barbulescu et al., 2021; Choi et al., 2021). The start-up technology also changed the modus operandi structure and parameters of the global economy (Ungureanu, 2020). Therefore, sustainable entrepreneurship is expected not to only focus on job creation and big profits but also consider environmental and social aspects (Sukoco et al., 2020). This study also discovered several problems and obstacles faced by the entrepreneurs while achieving the goals. The results showed that there are 5 constraining variables including socio-cultural attitudes, education, access to start-up finance, administrative and regulatory frameworks, as well as assistance and support. These variables need to be developed and improved to professionally run sustainable entrepreneurship (Sukoco et al., 2020).

Furthermore, Sukoco et al. (2021), proved that 7 dimensions of entrepreneurial marketing including product innovation, customer focus, opportunity, proactive, value creation, risk-taking, and human resources are needed to increase product sales. These results are increasingly interesting and have more urgency, because further studies recommend different approaches for sustainable entrepreneurial start-ups (Sukoco et al., 2020). In the industrial era, these

recommendations examined different main factors that affect this start-up. According to Voinea et al. (2020), social start-up companies are important for policymakers, therefore, they need not to be considered as a threat, but as a means. Also, social impact was analyzed as a driver of sustainable entrepreneurial models. The urgency and novelty of this study are to focus more on technology absorption as the main factor in determining the success of global entrepreneurship using a path analysis approach based on GEI_2019.

Empirically, a successful start-up is required to internally and externally deal with various risks and uncertainties to run an entrepreneurial properly and sustainably. The previous empirical studies emphasized more on personal competencies such as self-efficacy, technical, and organizational rather than start-up capabilities (Ahmad et al., 2010; Mitchelmore & Rowley, 2010; Hopp & Stephan, 2012). The absence of this technology innovation provide difficulties of modern economic growth and global entrepreneurship because society faces a tilted balance of autonomous economy with a rapid increase of demand and supply(Matsui, 2018). However, sustainable start-ups have the potential to develop and propagate radical innovations in all economic sectors. Also, it contributes to a viable economy, but still needs better access to achieve this goal Bergset and Fichter (2015).

The entrepreneurial competence theory provided many clues about the main characteristics of entrepreneurs to influence the pre-start-up process and stages leading to a successful one. However, the theoretical rationale specified more on resource-based theory and integration with transaction costs (Cetindamar and Kilitcioglu (2013); Abu-Bakar et al., 2017; Acs et al., 2019; Prasetyo, 2020a, 2020b; Satyanarayana et al., 2021). The novelty and contributions of this study are based on the gap between theoretical and empirical because start-ups are faced with a lot of risks & investment difficulties, technological capabilities, integration & innovation, low market competition, and other obstacles (Choi et al., 2021; Prasetyo et al., 2021; Sukoco et al., 2020, 2021). This novelty model resulted in 3 main factors that were derived from 14 pillars of human resources to explain the entrepreneurship competitive performance. Therefore, this study is expected to be a good source of scientific foundation in building sustainable global entrepreneurial start-ups.

LITERATURE REVIEW

Literature review shows that the stakeholder theory is difficult to apply in this start-up entrepreneurship because entrepreneurs are forced to discover the future risks (Retolaza et al., 2009; Freeman & Dmytriyev, 2017; Freeman et al., 2021). This does not mean that the theory needs to be eliminated because it is necessary to use collaboration and network approaches (Aggarwal & Wu, 2018; Susilo, 2020; Prasetyo et al., 2021). Meanwhile, the collaboration and network enable a sustainable entrepreneurial start-up to be close to academia, business, government, and society. This ABGS promotes technological innovation and at the same time allow start-up companies to easily achieve improved welfare.

Furthermore, the economic network theory enables society to support, information, and other resources (Abu-Bakar et al., 2017; Kim, 2017). According to Kim (2017), the resource linkage theory needs to be used effectively and efficiently to access export-oriented marketing. The study of Abu-Bakar et al. (2017), examined the influence of various determinants on entrepreneurial start-ups in Saudi Arabia. The results showed only four hypotheses including. income, power of failure, perception of high status, and knowledge to have positively and significantly affects the business.

In addition, technology, finance, risk capital, human capital, and society are the main

resources in entrepreneurial start-ups (Coleman et al., 2013; Ye, 2018; Prabhu, 2019). The results showed human capital and technology capabilities are the factors that entrepreneurs need to possess (Sukoco & Pramerswari, 2017; Prasetyo & Kistanti, 2020; Prasetyo, 2020a). Meanwhile, technology absorption is the main determinant of global entrepreneurship performance (Prasetyo, 2020b). The results showed that the selection and designing of company structure, the right type of technology, and a market-oriented strategy are needed by entrepreneurs (Sugiono & Fordian, 2020). Furthermore, the entrepreneurs are required to have renewal abilities to support managerial skills.

Leadership has a unique function because lack of human resources, financial capital, and access to customers enable it to be more important in entrepreneurial start-ups than large companies (Tripathi, 2019). Meanwhile, empirical studies showed the attributes of successful and unsuccessful businesses and also emphasized the importance of life cycle and government policy support (Kalyanasundaram et al., 2020). In India, the emergence of an entrepreneurial ecosystem is not only supporting start-up's technology but also for their survival. This progress is supported by the financial, market system, and human resources based on the triple helix of Government, Industry, and Academics (Subrahmanya, 2018). Therefore, technological innovation start-ups are increasingly developing when included in a conducive entrepreneurial ecosystem (Subrahmanya, 2018; Barbulescu et al., 2021).

According to Cetindamar and Kilitcioglu (2013), three factors are used to assess the export competitiveness of start-up companies. The first includes growth, exports, value-added, and profit, while the second is comprised of human resources, technology, innovation and design capabilities, as well as financial resources. Meanwhile, the third factor is a description of the managerial ability process which comprises of both entrepreneurship and leadership characteristics (Cetindamar and Kilitcioglu, 2013; Acs, et al., 2019; Satyanarayana, et al., 2021). Furthermore, this study refers more to the theoretical basis based on the second factor of the resource-based model.

RESEARCH METHOD

Data collection was carried out through the Global Entrepreneurship Index (Acs, 2019). However, the advancement of technology showed that the GEI can be reused by further study objectives (Johnston, 2014; Martins & da-Caunha, 2018). The participants of this study were selected from 137 countries, with 31 variables consisting of 17 from GEM and 14 from the Global Entrepreneurship Index. Furthermore, there is 1 GEI and 3 sub-indices including entrepreneurial attitudes, abilities, and aspirations. Figure 1 below shows that the novelty model comprised of 3 factors that are derived from 14 variables. Therefore, the model appears simpler and explains the competitive advantage of global entrepreneurship performance.

Entrepreneurial start-up refers to as the first company to start operating, either individually, in family, or in groups because they acquire attitudes, aspirations, and capabilities for product development and market opportunities. The goal of this company is achieve through e-commerce to create efficiency, effectiveness, innovation, productivity, and adaptability into local and global markets. This entrepreneurship is not small, medium, large, and social because it can be started by anyone at any place. Data were analyzed using a path analysis method and Figure 1 shows that a structural equation system model is prepared for further understanding.

1) $SUK_i = \rho SUK_i.HC_i + \rho SUK_i.TA_i + \rho SUK_i.Cpt_i + \varepsilon_1$
2) $SW_i = \rho SW_i.HC_i + \rho SW_i.TA_i + \rho SW_i.Cpt_i + \rho SW_i.SUK_i + \varepsilon_2$

3) $AW_i = \rho AW_i.HC_i + \rho AW_i.TA_i + \rho AW_i.Cpt_i + \rho AW_i.SUK_i + \varepsilon_3$

4) $KW_i = \rho KW_i.HC_i + \rho KW_i.TA_i + \rho KW_i.Cpt_i + \rho KW_i.SUK_i + \rho KW_i.SW_i + \rho KW_i.SW_i + \varepsilon_4$

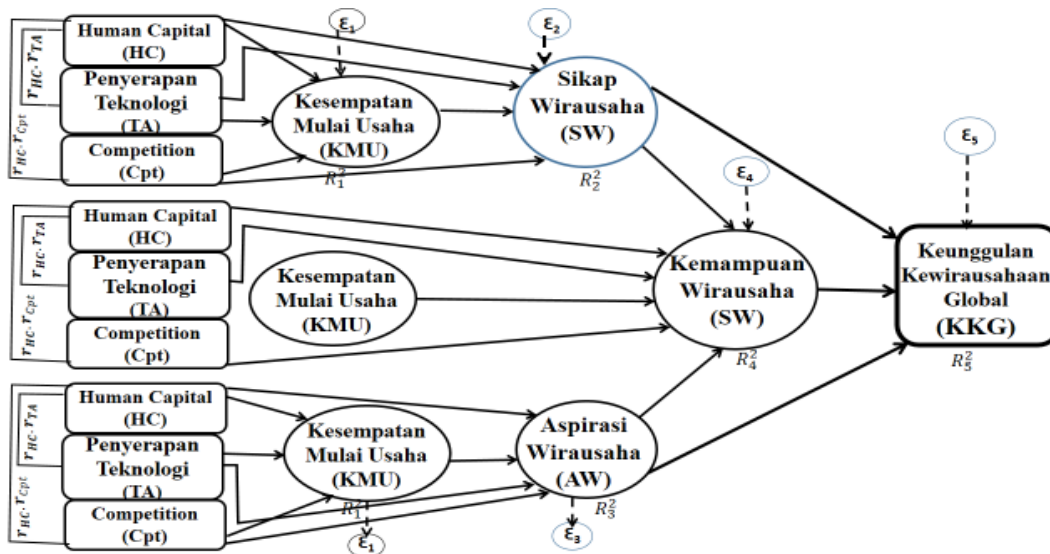5) $KKG_i = \rho KKG_i.SW_i + \rho KKG_i.AW_i + \rho KKG_i.KW_i + \varepsilon_5$

FIGURE 1
A SUSTAINABLE GLOBAL ENTREPRENEURIAL START-UP BUSINES SYSTEM MODEL

There are three forms of path analysis models and they include; correlated, mediated, and independent. Figure 1 shows that this study uses a correlated path analysis method following the main problems.

RESULTS AND DISCUSSION

Technology absorption, competition, and human capital are the three main determinants of a sustainable global entrepreneurial start-up. Meanwhile, human capital is considered the most fundamental asset that needs to be owned by entrepreneurs in starting their business. In the industrial era, this factor helps to absorb new technology, innovation and the basic capital for competition and entrepreneurial growth. Human capital also promotes the attitudes, aspirations, and abilities of entrepreneurs to achieve sustainable global entrepreneurship performance. Therefore, this factor is the first and main determinant in achieving economic growth and competitiveness (Prasetyo, 2020a; Prasetyo and Kistanti (2020)).

Table 1 shows that competition and technology absorption are the two biggest factors capable of driving the success of sustainable global entrepreneurial start-ups. Human capital only makes a partial contribution but it is still the first determinant that is effective in promoting the formation of this business. Therefore, the combination of these three factors enables the sustainable entrepreneurial start-up to be run effectively and efficiently. This is logical because the readiness to start this business is different and the start-up becomes interesting when competition and technology absorption are examined more deeply.

The results show competition to be the first main factor with a contribution of 42.4%, while the technology absorption capability has the second largest contribution of 38.7%. Technology absorption provides the largest and most significant positive contribution to

attitudes, aspirations, and abilities in promoting the achievement of global entrepreneurship performance. Therefore, the adoption of technology improves entrepreneurial performance because credit, electricity, and human resource development are more effective (Atiase et al., 2020). This factor is also more efficient in promoting the success of start-ups to achieve superior competitive performance. Meanwhile, the human capital index where resource capacity is reflected is regarded as the first effective factor.

A successful entrepreneurial start-up requires one to absorb innovative technology or have the courage to take on global competition. This ability is based on human capital resource asset that is effective in starting a business. Therefore, a successful entrepreneurial start-up is different from large companies or established investors because success is the creation of a new job. According to Santisteban et al. (2020), technology-based start-up businesses contribute significantly to job creation and economic development. Meanwhile, in the establishment of investment, success is the ability to make a profit (Kim et al., 2018; Cabrera & Mauricio, 2017).

Table 1
RESULTS OF STANDARDIZED COEFFICIENTS MODEL PATH ANALYSIS ON STRUCTURAL EQUATIONS 1-5

Model		Unstandardized Coefficients		Standardized Coefficients	t-stc.	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-0.019	0.023		-0.845	0.4		
	TA	0.366	0.057	0.387	6.398	0	0.446	2.24
	HC	0.195	0.057	0.184	3.429	0.001	0.569	1.756
	Cpt	0.547	0.08	0.424	6.813	0	0.422	2.369
a. Dependent Variable: SUK		R Multiple = 0.884			R Square = 0.782		Durbin-Watson = 1.787	
2	(Constant)	8.902	1.562		5.7	0		
	TA	13.44	4.465	0.21	3.01	0	0.341	2.93
	HC	6.073	4.035	0.085	1.505	0.135	0.523	1.912
	Cpt	12.192	6.352	0.14	1.92	0.057	0.313	3.195
	SUK	35.486	5.911	0.524	6.003	0	0.218	4.594
b. Dependent Variable: SW		R Multiple = 0.884			R Square = 0.781		Durbin-Watson = 1.721	
3	(Constant)	2.305	1.484		1.553	0.123		
	TA	29.631	4.242	0.406	6.986	0	0.341	2.93
	HC	21.072	3.834	0.258	5.496	0	0.523	1.912
	Cpt	17.262	6.034	0.174	2.861	0.0	0.313	3.1

						05		95
	SUK	15.778	5.616	0.204	2.81	0.006	0.218	4.594
c. Dependent Variable: AW			R Multiple = 0.921		R Square = 0.848		Durbin-Watson = 1.789	
4	(Constant)	-0.666	0.351		-1.898	0.06		
	TA	20.132	1.054	0.288	19.094	0	0.341	2.93
	HC	16.541	0.9	0.211	18.37	0	0.523	1.912
	Cpt	19.127	1.323	0.201	14.455	0	0.313	3.195
	SUK	14.317	1.347	0.194	10.63	0	0.218	4.594
	SW	0.17	0.018	0.155	9.243	0	0.367	2.726
	AW	0.071	0.019	0.075	3.694	0	0.42	2.381
d. Dependent Variable: KW			R Multiple = 0.996		R Square = 0.993		Durbin-Watson = 1.433	
5	(Constant)	-0.006	0.006		-0.921	0.359		
	SW	0.334	0	0.321	925.036	0	0.345	2.895
	AW	0.333	0	0.365	893.09	0	0.289	3.455
	KW	0.333	0	0.35	696.513	0	0.189	5.3
e. Dependent Variable: KKG			R Multiple = 0.999		R Square = 0.997		Durbin-Watson = 1.938	

Source: (Acs, 2019) processed by the author (2021). Significant limit at 5% level or p-value < 0.05

Table 1 and Figure 2 shows that the role and contribution of technology absorption enable it to be the main determinant. This factor is more efficient, adaptive, productive, and innovative in realizing entrepreneurial start-ups and at the same time promote the achievement of sustainable competitive performance. Other recent results showed that technology absorption affects job quality and innovative performance through innovation measures (Choi et al., 2020). The study Choi et al. (2021) showed that knowledge and technology capabilities positively affect start-up sales. Also, government financial support positively affects the relationship between knowledge and competitive performance. Furthermore, t he use of new digital technologies enables effective development of global entrepreneurial start-up (Soltanifar et al., 2021). The government needs to improve social protection and facilitate workforce transition to deal with the negative consequences or disruption of the industrial revolution, technological innovation, and borders on the job market (UNCTAD, 2021).

In modern economic theory, R.M. Solow showed that society needs to rely on resources capacity or the best human capital to achieve sustainable competitive performance. The results showed that knowledge help to promote technology absorption as the main determinant of economic and business growth, and at the same time reduce financial or other physical resources.

Furthermore, the theory of human capital is the first dynamic aspect that focuses on individual and group knowledge and skills. This means that entrepreneurs see business opportunities and have the basic characteristics and principles to accept and manage the risks. In addition, the most important thing is to absorb and use new technologies that are developing rapidly, dynamically, and adaptively to achieve competitive advantage performance.
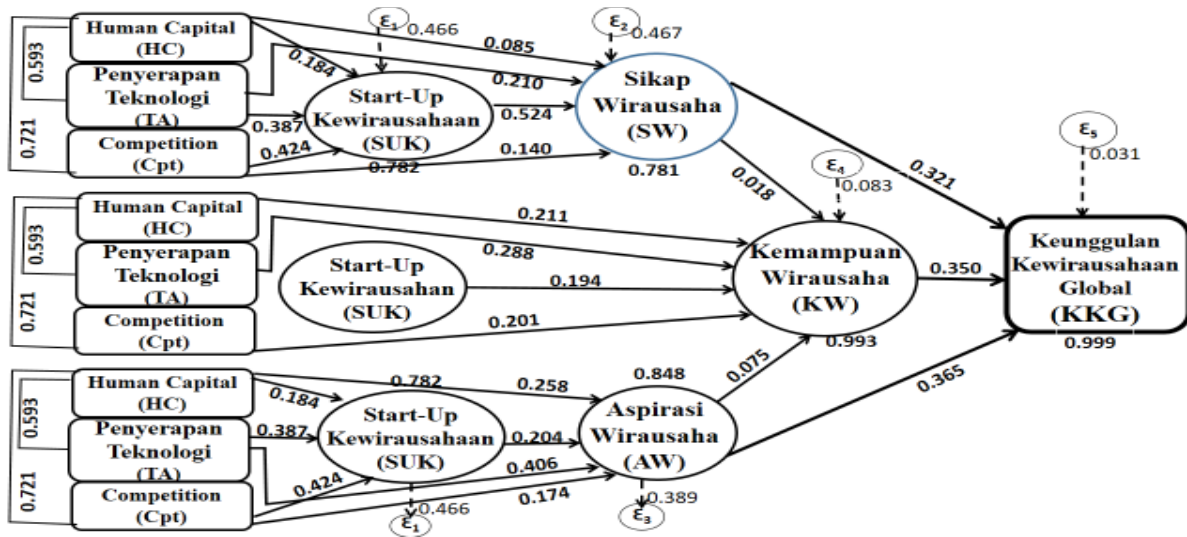

FIGURE 2
PATH ANALYSIS RESULTS ON TECHNOLOGY ABSORPTION TO PROMOTE SUSTAINABLE GLOBAL ENTREPRENEURIAL START-UPS

Figure 2 shows that the three main determinants including human capital, technology absorption, and competition help to promote sustainable global entrepreneurial start-ups. The TA is the most consistent and main factor in achieving a competitive advantage performance. This study is limited and failed to provide a scientific explanation of the differences between entrepreneurial start-ups in developed and developing countries. Therefore, the results have a strong theoretical basis by creating barriers for entry and when the uniqueness obtained in this start-up fails, it will still be profitable, because failure is considered as the beginning of success.

CONCLUSION

An entrepreneurial start-up is unique due to the creativity and knowledge that is reflected in the human capital index. The result showed that three main factors including technology absorption, human capital, and competition help to achieve a successful sustainable entrepreneurial start-up. Meanwhile, technology absorption is always consistency and helps to provide the largest contribution in achieving a competitive advantage performance, while human capital is the most effective basic capital to start a business. According to UNCTAD, the government needs to provide social protection against the impacts caused by the disruption of technological developments in the start-up company during the industrial era.

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