

VIENNA, AUSTRIA

APRIL 25-27, 2023

2023 WEI

INTERNATIONAL

**ACADEMIC
CONFERENCE PROCEEDINGS**

BUSINESS & ECONOMICS

BY THE WEI

ISSN 2167-3179 (ONLINE) USA

TABLE OF CONTENT

Reimagining the Role of Academia in Sustainability-Oriented Innovation: A Knowledge Management Perspective	4
.....	
<i>Abdelkader Daghfous, PhD</i>	4
<i>American University of Sharjah</i>	4
Is IoT really a thing? A review of the evolving definition of IoT and its role in operations management	5
<i>Adobi Jessica Timiyo</i>	5
The impact of the digital economy on the distribution of material products	6
<i>Anna M. Zarzycka</i>	6
Environment, Social Governance (ESG), Firm Performance and US Financial	7
Executives' Compensation?	7
<i>E Daniel Shim</i>	7
Mellin Transforms and the Black-Scholes Equation	8
<i>Ghada Alobaidi</i>	8
Social and private benefits of assisted reproductive technology: a national survey-based evaluation in Israel	15
<i>Gonen Limor Dina</i>	15
Organizational factors affecting expatriates' performance and goal orientation	16
<i>Hanan AlMazrouei</i>	16
Internal and External Factors of Social Entrepreneurs Influencing the Success of Social Enterprises in Thailand	17
<i>Lamson Lertkulprayad¹, Pajongsak Moudsong^{2*}</i>	17
Changes in working ways and organizational creativity during and after the Covid-19 in Saudi Arabia	25
<i>Rajeh Bati Almasradi</i>	25
The Role of Makerspace in Venture Development: Case Study of Thailand Entrepreneurial Ecosystem	26
<i>Sompong Promsa-ad¹, * , Apinan Aueaungkul², and Sanit Srichookiat³</i>	26
Exploratory Factor Analysis of the Impact of Educational Technology on Sustainable Consumption Behavior in a Knowledge-Based Economy	33
<i>Thitinan Chankoson</i>	33
The Unique Practices Of Workplace Bullying In Academe And Their Prevalence: An Exploratory Study	40
<i>Ya'arit Bokek-Cohen</i>	40

Or Shkoler..... 40

Eitan Meiri..... 40

Organizational culture in a taxi firm- lesson learned from Israeli case study 46

Yaffa Moskovich..... 46

Reimagining the Role of Academia in Sustainability-Oriented Innovation: A Knowledge Management Perspective

Abdelkader Daghfous, PhD.

American University of Sharjah

School of Business Administration, American University of Sharjah, P O Box 26666, Sharjah, UAE.
adaghfous@aus.edu

ABSTRACT

Sustainability-oriented innovation (SOI) has become one of the key strategies to achieving a sustainable future. Academic research and development has been at the forefront of this effort. Universities play a significant role in promoting and achieving SOI by creating and disseminating new knowledge, networking, and transferring knowledge to individuals, private firms, and public organizations. From a knowledge management perspective, classic academic research promotes knowledge creation, while academic collaboration promotes knowledge networking. The triple helix and its subsequent versions have been shown to enhance knowledge networking by creating partnerships amongst universities, industry, and governments to promote innovation in various domains. Academic publications and presentations facilitate knowledge dissemination, while classic classroom teaching promotes knowledge transfer.

However, reimagining the role of academia is necessary to promote and accelerate SOI. It is critical to focus on knowledge implementation through experiential learning for university students, as they learn about SOI and how to implement it in real-world scenarios. In addition to knowledge providers, universities should also focus on becoming knowledge brokers and integrators by connecting and integrating society needs, with industry and government resources and policies. By connecting knowledge providers with knowledge seekers, universities can facilitate the exchange and applications of knowledge, thereby promoting and accelerating SOI. Knowledge transfer should also be reimagined by developing the absorptive capacity of individuals, private firms, and public organizations. This capacity involves acquiring, assimilating, and applying knowledge to solve problems and create sustainable solutions. Finally, universities should focus on promoting entrepreneurship education that encourages and promotes a sustainability-oriented entrepreneurship (SOE) mindset. By enhancing SOE, universities can promote and accelerate SOI that benefits society and the planet. In this study we argue and provide examples of how reimagining of the role of academia could promote and accelerate SOI. We also show how universities could realign its focus on knowledge implementation, become knowledge brokers and providers, and develop the absorptive capacity of individuals in private, civil, and government organizations, and promote SOE.

Is IoT really a thing? A review of the evolving definition of IoT and its role in operations management

Adobi Jessica Timiyo

jessica.timiyo@aum.edu.mt

College of business

The American university of Malta

Abstract

This paper explores existing literature on the antecedents, challenges, and prospects of using IoT within the field of operations management. As businesses are bombarded with information overload and rapid changes in technology, the need to meaningfully harness the benefits of IoT has become crucial. But this would be challenging without having a broad understanding of the intricacies surrounding internet of things. Since technology changes quite often, it is difficult to decipher an exact definition of the term internet of things, thus suggesting that with every technological advancement leads to changes in the conceptualization and operationalization of IoT. Though the lack of precise definition may not have cast a shadow on the concept, but it does place limitations to its functionality and applicability in a much broader perspective. This paper addresses this issue by examining IoT from a three-fold dimension namely physical, technological, and socio-economic dimensions. Its role within the field of operations management, including process optimization, connectivity, and real – time tracking, were identified. Challenges faced by operations managers using IoT have also been discussed, and their causes highlighted for managerial action.

Keywords: IoT, operations management, business process, process optimization, RFID

The impact of the digital economy on the distribution of material products

Anna M. Zarzycka, Ph.D.

Collegium of Business Administration

SGH Warsaw School of Economics

Al. Niepodległości 162

02-554 Warsaw

azarzyc@sgh.waw.pl

Abstract

The issue of product distribution in the new realities of the digital economy is one of the topics rarely addressed in economic literature. There is also a lack of in-depth research in this area. Therefore, the aim of the paper is to identify the key challenges for distribution in the digital economy and to develop a model of the distribution process of material products in the digital era. The following research methods were used:

systematic review of literature (Polish-German- and English-language in the field of business management, strategic management, marketing and logistics)

quantitative research (method of analyzing websites of Polish enterprises)

qualitative research (in-depth, semi-structured individual interview and case studies).

On this basis, the following conclusions were formulated:

Particularly important from the point of view of distribution are the following phenomena: development of social networking sites, mobile technologies, the possibility of digitizing certain products, the Internet of Things, 3D printing, automation and robotization.

A challenge for the distribution of products in the context of the characteristics of the digital economy is also the new face of the modern consumer, shaped by such phenomena as prosumption, the so-called.

The emergence of the prosumer as well as the network and mobile consumer, together with new technological solutions, lead to the redefinition of the product itself.

On the basis of the above considerations and adopting a process approach, a model of the product distribution process was constructed. Its components include: inputs on the producer's side, outputs on the consumer's side, elements (sub-processes) of the distribution process: individualization / personalization of the offer, entities of the distribution process and relations between them (distribution channels), technological architecture (understood as information exchange - communication) and physical product delivery. The model also indicates its four key features: distribution individuality, flexibility, process integration, susceptibility to the development of new information and communication technologies.

Environment, Social Governance (ESG), Firm Performance and US Financial Executives' Compensation?

E Daniel Shim, Dr, daniel.shim@csuci.edu, California State University, California, USA
and Dr. Jooh Lee, lee@rowan.edu, Rowan University, New Jersey, USA

Abstract

Research Question and Purpose

This paper empirically examines the interaction among Environment, Social Governance (ESG), Firm Performance and Financial Executives' Compensation. Specifically, we test whether the ESG ratings directly impacts top executive compensation or indirectly interact with firm performance on executive pay.

Research Methodology

To test the hypotheses, we employed the lagged OLS regressions analysis. Our sample includes all U.S. bank and financial institutions (SIC 6000–6799) listed in the COMPUSTAT. Our final sample consists of 1,440 firm-year observations for the 5-year period from 2015 to 2019. This period represents the most recent data immediately before the COVID.

Findings

We find that the ESG ratings significantly and positively impacts bank and financial executives' cash compensation (salary plus bonus). As expected, the ESG rating significantly and positively interact with stock price on executive compensation. Additionally, ESG rating also significantly interacts the relationship between firm size and cash compensation. Interestingly and importantly, the ESG rating does neither show any significant direct nor show any interaction effects with ROE and Leverage on total executive compensation.

Originality/value

Our research is significant because it is the first study that examines the interaction effect of the ESG performance on financial executives' compensation. Limited previous studies examine the role of ESG on financial executives' compensation and, at best, show mixed results. Our study provides a theoretical understanding of the pay for performance relationship and presents important empirical evidence on the role of ESG on financial executives' pay.

JEL Classification: M41, M52, M55

Keywords: Financial Executives' Pay, Pay-for-performance, ESG performance, Interaction effect

Mellin Transforms and the Black-Scholes Equation

Ghada Alobaidi

Department of Mathematics and Statistics, American University of Sharjah
Sharjah, United Arab Emirates
galobaidi@aus.edu

Abstract

We revisit the valuation of European-style options using the Black-Scholes partial differential equation and show that we can recover the Green's function solution by taking the Mellin transform of the equation with respect to the price of the underlying.

Keywords: Options, Green's function, Mellin transforms.

Mathematics subject classification: 91B28

1 Introduction

One of the interesting developments in financial markets over the last 15 to 20 years has been the growing popularity of derivative securities or contingent claims (e.g. options). Options are generally defined as a contract between two parties in which one party has the right but not the obligation to do something, usually to buy or sell some underlying asset. Having rights without obligations has financial value, so option holders must purchase these rights, making them assets. Call options are contracts giving the option holder the right to buy something, while put options, conversely entitle the holder to sell something. Options can also be associated with bonds (i.e. convertible bonds and callable bonds), where payment occurs in installments over the entire life of the bond. Options on stocks were first traded in an organized exchange in 1973. Since then, there has been a dramatic growth in options markets. Huge volumes of options are also traded over the counter by banks and other financial institutions. The values of some of these derivative products can be expressed mathematically, the Black-Scholes model being the best known of these. Many of these models in the past have had to be tackled numerically. The contribution of Black and Scholes was not only theoretical but had real world applications since the Black-Scholes model has been widely used to price stock options, index options, etc. The original Black-Scholes paper is referred to the web site of the Nobel prize for their work explaining the significance of the methods and equation.

The value $V(S, t)$ of many options can be found using the Black-Scholes-Merton PDE,

$$\frac{\partial V}{\partial t} + \frac{\sigma^2 S^2}{2} \frac{\partial^2 V}{\partial S^2} + (r - D_0)S \frac{\partial V}{\partial S} - rV = 0 \quad (1.1)$$

where S is the price of the underlying and $t < T$ is the time, with T being the expiry time. The parameters in the above equation are the risk-free rate, r , the dividend yield, D_0 , and the volatility, σ , all of which are assumed constant in the present analysis.

European exercise terms dictate that the option can only be exercised on the expiration date. This limitation is not a major concern because few calls are ever exercised before the last few days of their life. Towards the end of the life of a call, the remaining time value is very small, but the intrinsic value is the same.

In this paper, we will use a Mellin transform methods of solving the Black-Scholes equation for the

value of the option with respect to the asset price, S . Using this transformation, we would be able to recover the Green's function solution for a general pay-off. In section 2, we describe the analysis of Black & Scholes model using Mellin transform for the value of the option. Finally, section 3 contains discussion and the conclusion.

Analysis

The value $V(S, t)$ of an option is assumed to obey the Black-Scholes-Merton PDE,

$$\frac{\partial V}{\partial t} + \frac{\sigma^2 S^2}{2} \frac{\partial^2 V}{\partial S^2} + (r - D_0)S \frac{\partial V}{\partial S} - rV = 0 \quad (2.2)$$

where S is the price of the underlying, and D_0 , r and σ , all of which are assumed constant, are the dividend yield, risk-free interest rate, and volatility respectively. For a European style option, with no early exercise features, this equation is typically solved together with a specified pay-off at expiry, $t = T$, so that $V(S, T)$ is known. It is worth noting, as did Merton (1974), that the various European-style options all obey the same PDE (1.1) but with different boundary conditions. There are numerous ways of solving this equation, including for example Green's functions and Laplace transforms in time. In the present study, we would like to add another method to that list, the Mellin transform, which is defined as (e.g. Polyanin & Manzhirov, 1998)

$$v(p) = \mathcal{M}[V(S)] = \int_0^\infty V(S) S^{p-1} dS \quad (2.3)$$

together with the inverse transform

$$v(p) = \mathcal{M}^{-1}[v(p)] = \frac{1}{2\pi i} \int_{\sigma-i\infty}^{\sigma+i\infty} v(p) S^{-p} dp \quad (2.4)$$

The use of Mellin transforms is suggested by the presence of terms of the form $S^n \left(\partial^n V / \partial S^n \right)$ in (1.1). Taking the Mellin transform of this equation with respect to the price of the underlying S , we get

$$\frac{\partial v}{\partial t} + \left[\frac{1}{2} \sigma^2 p(p+1) - (r - D_0)p - r \right] v = 0 \quad (2.5)$$

Which has a solution

$$v = \mathcal{F}_0(p) \exp \left[\left(\frac{1}{2} \sigma^2 p(1+p) - (r - D_0)p - r \right) (T - t) \right] (2.6)$$

where $\mathcal{F}_0(p)$ is a constant of integration. Setting $t = T$, we deduce that $\mathcal{F}_0(p) = \mathcal{M}[V(S, T)]$ is the Mellin transform of the pay-off. By completing the square, we can write

$$v = \mathcal{F}_0(p) \exp \left[\left(\frac{1}{2} \sigma^2 \left(p + \frac{1}{2} + \frac{D_0 - r}{\sigma^2} \right)^2 (T - t) \right) \right] \times \exp \left[-\frac{1}{2} \left(\frac{\sigma^2}{4} + r + D_0 + \left(\frac{r - D_0}{\sigma} \right)^2 \right) (T - t) \right] \quad (2.7)$$

At this point, we can either introduce a specific pay-off and then invert the transform, or, alternatively, follow the path below and can invert the transform for a general pay-off using the property that if $\mathcal{M}[f_0(S)] = \mathcal{F}_0(p)$ and $\mathcal{M}[f_1(S)] = \mathcal{F}_1(p)$, then

$$\mathcal{M} \left[\int_0^\infty Z^\beta f_0 \left(\frac{S}{Z} \right) f_1(Z) dZ \right] = \mathcal{F}_0(p) \mathcal{F}_1(p + \beta + 1), \quad (2.8)$$

So, for Black-Scholes, we can use this formula if we set $f_0(S) = V(S, T)$ and

$$f_1(S) = \frac{1}{\sigma \sqrt{2\pi(T-t)}} \exp \left[-\frac{(\log S)^2}{2\sigma^2(T-t)} \right]$$

$$\mathcal{F}_1(p) = \mathcal{M}[f_1(S)] = \exp \left[\frac{1}{2} \sigma^2 p^2 (T - t) \right], \quad (2.9)$$

With $\beta = -\frac{1}{2} + (D_0 - r)/\sigma^2$, so that the value of the option is

$$V(S, t) = \frac{1}{\sigma \sqrt{2\pi(T-t)}} \exp \left[-\frac{1}{2} \left(\frac{\sigma^2}{4} + r + D_0 + \left(\frac{r - D_0}{\sigma} \right)^2 \right) (T - t) \right] \times \int_0^\infty Z^{-\frac{1}{2} + \frac{D_0 - r}{\sigma^2}} V \left(\frac{S}{Z}, T \right) \exp \left[-\frac{(\log Z)^2}{2\sigma^2(T-t)} \right] dZ \quad (2.10)$$

Upon making the transformation $Z = S/S'$, we recover the well-known formula for the value of the option involving the Green's function,

$$V(S, t) = \frac{1}{\sigma \sqrt{2\pi(T-t)}} \exp[-r(T-t)] \times$$

$$\int_0^\infty V(S', T) \exp \left[-\frac{1}{2\sigma^2(T-t)} \left(\log \frac{S}{S'} + \left(\frac{\sigma^2}{2} - r + D_0 \right) (T - t) \right)^2 \right] \frac{dS'}{S'} \quad (2.11)$$

Discussion

In the previous section, we solved the Black-Scholes-Merton PDE by taking a Mellin transform with respect to the asset price, S . The Mellin transform is one of the integral transformations of classical applied mathematics, but it is used somewhat less frequently than Laplace and Fourier transforms, to which it is related by (Polyanin & Manzhirov, 1998)

$$\mathcal{M}[f(S), p] = \mathcal{F}[f(e^s), ip] = \mathcal{L}[f(e^s), -p] + \mathcal{L}[f(e^{-s}), p] \quad (3.1)$$

Our own feeling is that this particular transform is well-suited to the Black-Scholes framework, at least for European style options, because of the presence of terms of the form $S^n \left(\frac{\partial^n V}{\partial S^n} \right)$ in (1.1); such terms transform well under Mellin transforms. By using this transformation, we were firstly able to lay down a framework whereby an option with a specific pay-off could be valued, and secondly to rederive the Green's function solution for a general pay-off.

Finally, we would like to make a suggestion for further work. Although the European-style options considered here are comparatively straightforward to value in the Black-Scholes framework, American-style options, with early exercise features are considerably less so. One promising path for American options has been the use of integral transforms to convert the problem from a PDE together with boundary conditions at the exercise boundary into an integral equation formulation. An example of this was our own use (Mallier & Alobaidi, 2000) of the partial Laplace transform (in time) of Evans et al. (1950), and it is possible that a similar approach could be taken using a partial Mellin transform.

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Social and private benefits of assisted reproductive technology: a national survey-based evaluation in Israel¹

Gonen Limor Dina

Background: The objective of this paper was to measure the private and social benefits resulting from technological advances in fertility treatment. **Methods:** An empirical model investigates the willingness-to-pay (WTP) for advances in the medical technology of in vitro fertilization (IVF) among the general public and among IVF patients in Israel. **Results:** The empirical model's findings demonstrate that IVF patients and the general public value medical technology advances and have a positive WTP for it. The average WTP for IVF technology advances, among IVF patients, is US\$3116.9 whereas for the general public it is US\$2284.4 **Conclusion:** Available evidence suggests that advances in medical technology have delivered substantial benefits and appear to have contributed to improved wellbeing.

Gonen, L. D. (2016). Social and private benefits of assisted reproductive technology: a national survey-based evaluation in Israel. *Journal of Comparative Effectiveness Research*, 5(1), 49-63.

Organizational factors affecting expatriates' performance and goal orientation

Hanan AlMazrouei

United Arab Emirates University

Abstract

Purpose – This study aims to examine the relationship between cultural intelligence and organizational commitment and its effect on turnover intention and learning goal orientation within the expatriate society of the UAE.

Design/methodology/approach – The paper suggests a theoretical model derived from survey responses gathered from expatriates employed in multinational organizations located in Dubai in the United Arab Emirates.

Findings – The results show that organizational commitment partially mediates the relationship between cultural intelligence and turnover intention. Furthermore, the results show that organizational commitment partially mediates the relationship between cultural intelligence and learning goal orientation.

Originality – There is a paucity in international business research investigating the effects organizational commitment and cultural intelligence of expatriates have on their turnover intention and learning goal orientation.

Keywords: cultural intelligence; turnover intention; learning goal orientation; expatriates; UAE

Internal and External Factors of Social Entrepreneurs Influencing the Success of Social Enterprises in Thailand

Lamson Lertkulprayad¹, Pajongsak Moudsong^{2*}

Faculty of Business Administration for Society

Srinakharinwirot University

114 Sukhumvit 23, Wattana District Bangkok 10110, Thailand

Corresponding Author: pajongsa@g.swu.ac.th

Abstract: The research aims to study the importance of internal and external factors and to analyze distinctive factors influencing the success of social enterprises in Thailand. By determining the research population of 170 members of the social enterprise promotion, 20 social enterprises were in-depth interviewed in different areas and categorization and then analyzed by statistic program. The interesting results were mainly based on direct and indirect competitive experiences, innovation, accessing funding, and personnel recruitment which enhanced the social enterprises' success. Especially for internal factors of owners were a good investment. They need to continuously improve their operation and reach their social impacts.

Keywords: Success Factors, Social Entrepreneurs, Thailand

Introduction

The term "Social Enterprise" was first started in England around 1978 by Freer Spreckley. Although earlier activities in the history of many countries focused on donations and sharing by aristocratic kings and nobles. But it is not a way to solve social problems to permanently reduce inequality. Until the late 1990s, the British brought this concept back to develop an enterprise model to create a change in society by establishing a group of business sharing in the form of cooperatives, community enterprises, and voluntary organizations. With this concept, middle to lower-class groups had come together to solve problems and maintain their interests in demanding and bargaining to solve problems in society. (Faculty of Senior Executive Students of Capital Market Academy, 2014) Later, in 2002, the British government established the Social Enterprise Unit in the Ministry of Trade and Industry to connect social enterprise organizations which at that time used many different names like credit unions, development fund cooperatives, and volunteer organizations. For the public benefit, a government agency was established to serve in this manner. The government has given rise to a new legal entity form for those interested in running a business and those who want to change social problems into play a role in the process. In England, in 2006, the agency was expanded and renamed as Office of the Third Sector, which became a model for many countries interested in reducing social inequality. used as a guideline for practice.

In Thailand, there were not many social business establishments in the beginning, and there was no clarity on management whether will change from a business company that does corporate social responsibility to operating a social enterprise or will change the form of a non-profit organization to a non-profit social business. Previously many organizations were a non-profit business model before the term social enterprise. Some cooperatives have been established as community enterprises or multiple sufficiency agricultural communities in each region across the country(Wipaporn Chairat, 2017)

Later, when the government had the policy to prepare the Social Enterprise Promotion Act and create government agencies to support this type of business promotion. Therefore, it is a new thing in society that must cooperate in every aspect and create a corrective action plan. In which the government has taken the management model from the existing guidelines in England, from the year 2019. It was the Office of Social Enterprise Promotion, which is not a government agency and state enterprise been established. But this public agency was subordinated to the government under the supervision of the Prime Minister. The purpose of establishing this agency was to promote and develop the quality of social enterprises self-reliant and widely expanded to become an important mechanism for fair and sustainable national development. Also, it should be an academic unit and is responsible for the administration of the Committee for Promotion of Social Enterprises, including the registration of social enterprises. The agency must implement plans for projects that support and provide benefits according to various measures of the upcoming state. But from operation since the establishment of the organization onwards, there are only 170 social enterprises registered with social enterprises, which were not many, but most of them have been successful in helping society and the environment. These organizations are the pioneers that can set an example for the Thai business sector in the future that will not only build their wealth to survive but also create sustainability in the Thai economy by sharing success. Every success of social enterprises consisted of internal and external factors which were complicated in detail. Each factor influenced the progress of social enterprises in a distinctive dimension. The slowly increasing numbers of Social Enterprises perhaps occurred from some important factors. Therefore, those who think and intend to establish a social enterprise organization in the future need to learn and understand the factors for the success of social enterprises registered with the Office of Social Enterprise Promotion. From the literature review, it was found that small and medium-sized enterprises operating a business similar to social enterprises had factors such as education, business experience, hard work, business awareness of entrepreneurs, innovation, and response to business opportunities. and entrepreneurial self-sufficiency (Windirah, Suwarsinah, & Adhi, 2017). It influenced their business operations. But running a successful social business in Thailand consists of various important factors and how to promote the progress of social enterprises during the period was up to the cooperation between government agencies and social communities in pushing the new policies to help more social enterprises succeed.

Research Framework

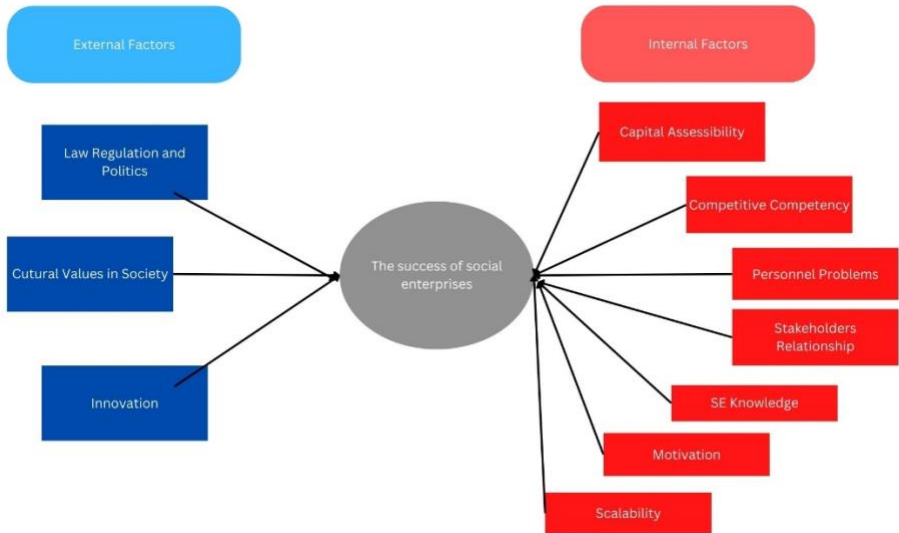


Figure 1 Research framework of internal and external factors influencing the Success of Social Enterprises in Thailand

Literature Review

The Concepts of Social Enterprises

“A social enterprise is a business with primarily social objectives whose surpluses are principally reinvested for that purpose in the business or in the community, rather than being driven by the need to maximize profit for shareholders and owners.” (Pulse Regeneration Limited, 2010) Its definition was quite similar to The Canadian Social Entrepreneurship Foundation in the year 2010. “a social entrepreneur is someone who recognizes a social problem and uses entrepreneurial principles to organize, create, and manage a venture to make a social change (a social venture)” (The Canadian Social Entrepreneurship Foundation, 2010) But at present, its concepts more emphasized in innovation. It became “society’s change agents: creators of innovations that disrupt the status quo and transform our world for the better” (The Skoll Foundation, 2012a, 2012b)

By its theory, being a social enterprise, it must consist of: -

- 1) A business must be able to produce products or services to respond to the customers’ needs.
- 2) A business must have good objectives to solve social and environmental problems.
- 3) A business’ profit must return to grow up its own business and communities. (Defourny & Nyssens, 2006)

Besides its theory and definition stated above, social enterprises are transformative organizations with the following roles (The members of the Social Entrepreneurship Funders Working Group, 1998)

1. Have a mission to create sustainable social value, not for their own business.
2. Determined to seek new opportunities to create missions for the value of society.
3. Bring innovation and continuous learning processes into the organization.
4. Operate without focusing only on the limited resources available at hand.
5. Disclose the results of the operation for general recognition.

In conclusion, social enterprises were similar to general business but provided sustainable objectives to solve social and environmental problems by seeking innovation and contributing to equality for society. The main concept was to balance profit, the planet, and people. No social enterprises could be survived if they did not apply these concepts

Successful Factors in the Management of Social Enterprises

Factors of successful social business operations are as follows:-

1) Social Entrepreneurship 2) Social goals/ Social mission 3) Social Innovation 4) Competitive Advantage 5) Stakeholders' Partnership 6) Social Ownership and Participation 7) Ability to expand business (Scalability) 8) Social Impact (Faculty of Senior Executive Students of Capital Market Academy, 2014) But according to Grunert and Ellegard, they recommend that success factors provided some outstanding characteristics as follow:-

- the necessary components of the company's management system;
- the distinctive qualities of the organization;
- a heuristic tool for refining managers' perceptions of the organization;
- a summary of the critical qualifications and resources required to succeed in a certain market.(Grunert & Ellegaard, 1993)

Moreover; from reviews of many research papers, more than eight critical success factors were identified. These are (1) a strong leader (leadership): someone who is in charge of managing and organizing the company and has a solid rationale and appropriate credentials; (2) partnerships: the capacity to establish and manage a core set of ties for the enterprise's advantage, particularly with local public sector agencies; (3) Triple bottom line planning: a bottom line that not only assesses economic gains, but also the impact of the organization on people and the environment. The triple bottom line is a technique of representing a company's local and global effect and sustainability. (4) The attractiveness and clarity of the unique concept: the product offered to clients should be able to demonstrate that a fresh idea has market potential. (5) Business planning and marketing: Either the company's executives have business and marketing expertise, or they have access to it through their important partners; (6) short and long-term benefits management: To maintain stakeholder engagement and commitment, a company should show how it will provide both long-term and short-term advantages for its stakeholders; (7) Local community involvement: The ability of the business to successfully include local stakeholders and beneficiaries are crucial; Risk management, often known as activity planning, is the process of avoiding risk and the effects of external variables.(Boyer, Creech, & Paas, 2008; Di Domenico, Haugh, & Tracey, 2010; Mason, 2011; Sharir & Lerner, 2006)

Research Methodology

The population used in this research consisted of the following samples: Social entrepreneurs who have registered their agencies as social enterprises under the Social Enterprise Promotion Act totalling 170 businesses. (Office of Social Enterprise Promotion, 2021) The research methods were used in a qualitative research manner and determined the number of sample groups by issuing criteria for selecting those who will respond to the social enterprise questionnaire as follows:

1. Must be a person who has operated a social enterprise for at least 3 years.
2. Must hold the position of owner or executive of a social enterprise only.
3. Must be an enterprise registered with the Office of Social Enterprise Promotion.
4. Must have sustainable income from selling products or services in social enterprises.
5. Capital and assets of the social enterprise must not be less than 1 million baht.

All qualitative research samples will be determined by using the purposive sampling method. The researcher would like to define a sample group of 20 businesses according to the size of the qualitative research sample for the case study, which should not be less than 10 persons to be used in in-depth interviews (Suheewasinnon P. & Pasunon P., 2016) to collect data and analyzed through the ATLAS program to analyze the linkage of the research.

Research Results

From in-depth interviews with 20 social entrepreneurs in different areas and types of organizations such as Hi School Thailand, Siam Able Innovation, etc. Most interviewees emphasized more at internal factors like teamwork, knowledge management, or employee expertise. Only some external factors impacted organizational success. For example, business competition, cultural values, community relations, and public policy were essential for building social economic, and environmental impacts. Some social entrepreneurs issued that “customers’ pain points were very important in the business competition since we did not want to motivate consumers’ purchasing because of compassion”

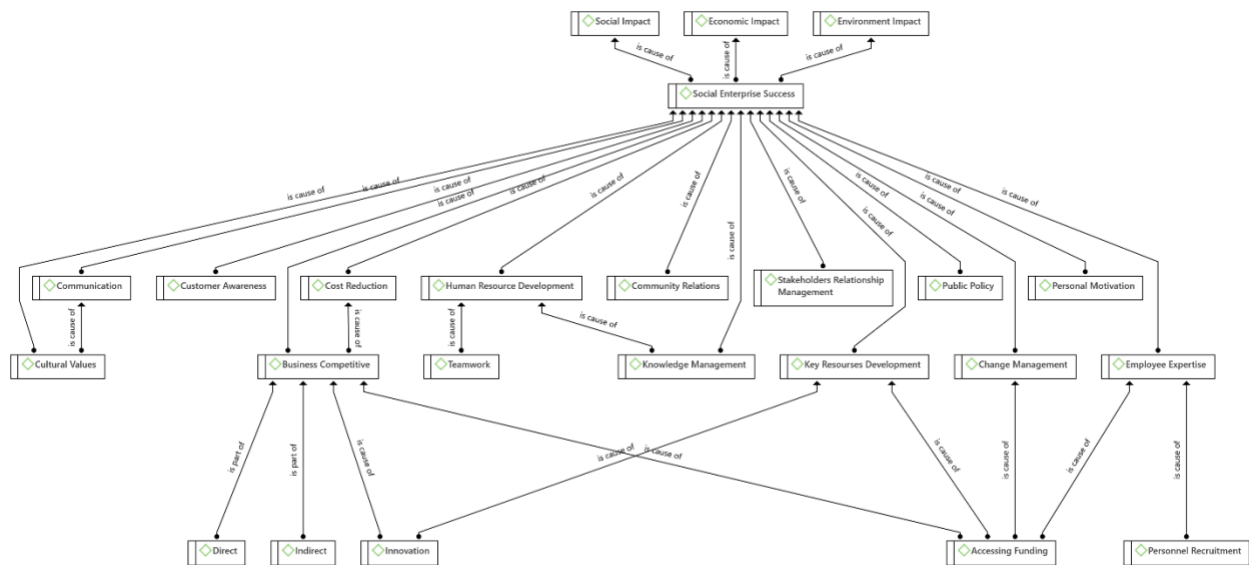


Figure 2: Internal and External Factors Influencing Social Enterprise Success

From the mentioned figure, direct and indirect competition with social innovation encouraged the high potential of business competitive experiences which help social entrepreneurs find the methods of cost reduction with the development of key resources. In addition, Accessing funding was so important for social enterprises to support high business competitiveness, key resource development, change management, and hiring employee expertise. From overall interviews in twenty social enterprises, external factors i.e. cultural values, customer awareness, community relations, stakeholders relationship management, and public policy perhaps were the necessary parts to accomplish social enterprise success. However; the lower parts of the diagram i.e. direct and indirect competition, innovation, accessing funding, and personnel recruitment were very important internal factors that each social entrepreneur had to realize in operating sustainable social enterprises. Without these factors, they could organize the business

sustainably, but perhaps it was so difficult to have scalability since their social enterprise did not contain a strong root of operation.

Discussion

In in-depth interviews with social entrepreneurs, we found that direct and indirect competition as well as innovation factors were so important that encourage their social enterprises successfully. The research results were similar to H. Oswald and R. Tengeh who mentioned that to prepare beneficiaries for prospects, SEs should expose them to cutting-edge innovations and should prioritize business skill transfer priority.(Oswald & Tengeh, 2022) While accessing funding and personnel recruitment was still essential for organizations that approached sustainable achievement, this concept was illustrated similarly for critical success factors in individual characteristics and competencies and enterprise processes and capabilities.(Alamene, IkpeUmoh, & Sylva, 2021) Moreover; the external factors i.e cultural value, public policy, community relations, and stakeholders relationship management were still important for more successful social enterprises but the factors may be different from other research papers which issued distinctive nine factors including financial support, government policies, government programs, education and training, research and development transfer, commercial and professional infrastructure, market openness, access to physical infrastructure, and cultural and social norms. (Levie & Autio, 2008)

Conclusion and Recommendation

From the research results, the first step to the success of social enterprises in Thailand was giving experience in business competition by training knowledge of business or increasing innovation competency with start-up funding. All social entrepreneurs must have equal opportunity to access funding from the beginning stage of business. Government agencies should be a part as a supporter in recruiting appropriate staff and give training for creating teamwork and employee expertise. As shown in Figure 3, the process to build successful social enterprises should step from the first level and continue establishing networks in the third level which helps build stakeholders relationship management and customer awareness. At present most people in Thailand still did not understand social enterprise. It was a good chance to plan step by step to promote social enterprises to be well-known nationally.

Level	the Success of Social Enterprises in Thailand
1	Direct and Indirection Competitive experiences, Innovation, Accessing Funding, Personnel Recruitment
2	Cultural Values, Business Competitive, Teamwork, Knowledge Management, Key Resources Development, Change Management, Employee Expertise
3	Communication, Customer Awareness, Cost Reduction, Human Resource Development, Community Relations, Stakeholders Relationship Management, Public Policy, Personal Motivation

Figure 3: Level of Internal and External Factors influencing the Success of Social Enterprises in Thailand

Acknowledgement

The author would like to express thanks to Associate Cholvit Jearajit, Assistant Professor Dr. Wasan Sakulkijkarn, Third-year students in Section A and B, and involving staff of Business Administration who assisted in this research project. Moreover; this research was financially supported by a research grant from the Faculty of Business Administration for Society, Srinakharinwirot University, Thailand (Contract number: 093/2565) and ethically reviewed by the research ethics committee, Thailand (Number: SWUEC-130/2565E)

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Changes in working ways and organizational creativity during and after the Covid-19 in Saudi Arabia

Rajeh Bati Almasradi
University of Bisha
rbalmasradi@ub.edu.sa

ABSTRACT

The purpose of this study is to investigate and measure the effects of the first experience of teleworking in Saudi Arabia during the covid-19 pandemic. The main problematic is to explore to what extent teleworking in all Saudi Arabian economic and administrative sectors have developed organizational creativity. This first application of teleworking on a large scale, a wide range of civil servants, certainly exposed a new kind of difficulties and problems. These difficulties and problems would have encouraged managers to seek practical solutions, to innovate and be more creative. This current research tried to measure the extent of organizational creativity as well as its contribution to the development of new working methods in Saudi Arabians organizations in both sectors and (public and private) services organizations. Moreover, it is exploratory and capitalizes on novel findings from a questionnaire. The questionnaire was sent to 300 Saudi organizations but only 224 of their managers and teleworkers responded. The participants are divided between 186 public and private firms, 64% of which have more than 200 employees. Therefore, Data were collected from 224 employees in Saudi firms and institutions. The findings of the study indicated that learning, trust, autonomy and working from home affect positively organization creativity. While centralization does not favorite creativity.

Keywords: Organizational Creativity, Teleworking, Saudi Arabia, Covid-19

The Role of Makerspace in Venture Development: Case Study of Thailand Entrepreneurial Ecosystem

Sompong Promsa-ad^{1, *}, Apinan Aueaungkul², and Sanit Srichookiat³

^{1,2,3} Faculty of Economics and Business Administration, Thaksin University

*Corresponding Author; email: psompong@tsu.ac.th

Abstract

Filled with manufacturing equipment, like-minded individuals, and collaborative learning settings, makerspaces are regarded as one of the ideal environments to promote entrepreneurship. While there is a growing body of literature on how makerspaces support the growth of entrepreneurship, there has not been much conducted in emerging economies. This study sheds light on the subject using the samples from Thailand's startup ecosystem. According to the findings based on in-depth interviews, the majority of makerspaces considered venture creation as one of their primary services. Some even identified that carefully design their own entrepreneurial ecosystems were their key operating strategies as conventional source of income like subscription model may seem unpopular in this middle-income country. We illustrated business model canvas of some selected makerspace from various types including non-profit, profit-oriented, and corporate-based makerspaces. We also explained several entrepreneurship development mechanisms and how those relate to business models of respective makerspaces. Issues about using makerspace as a site to promote entrepreneurship in developing economies are also discussed.

Keywords: Makerspace, Entrepreneurship, Startup Ecosystem

1. Introduction

Makerspaces are collaborative workspaces that provide a variety of resources for developing, designing, and testing new ideas and products. It is a part of maker movement which is a sub-culture but more technology-focused version of Do-It-Your-Self (DIY) culture. Equipped with easily accessible industrial grade tools at low cost, makerspace is an ideal setting for entrepreneurs to create and test their prototype. One of the most success stories is the case of Square, a financial service platform developed by Jim McKelvey and Jack Dorsey. They used tools and equipment provided by TechShop, a makerspace, to create the prototype for communicating their vision to venture capitalists. With a working prototype in hand, they were able to convince the investor of the effectiveness of a mobile card reader, which allowed them to begin a business that is now worth several billions of dollars (Browder, Aldrich, & Bradley, 2019).

As most countries increasingly focus on innovation and entrepreneurship, makerspaces have become the essential elements of the entrepreneurial ecosystem and have emerged as a key tool for supporting venture development around the world. The "mass innovation and mass entrepreneurship policy" of China, which aims to turn the country into an invention-driven nation, uses makerspace as one of its primary tools (Fu, Li, & Xie, 2022). In the United Arab Emirates, makerspace is considered as one of key components in startup ecosystem, the mechanism expected to help the country converting from an oil-based economy to knowledge-based economy (Jung, Al Qassimi, 2021).

Although there is growing body of literature focusing on the impact of makerspace on venture development, there is currently little study conducted in emerging economies. Using the context of Thailand's startup ecosystem, this study examines how these spaces can support entrepreneurial activity and are helping to address some of the key challenges facing startups in the country. Specifically, we first analyze business model of makerspaces in the sample. Using the details of components specified in business model canvas, we then derive the themes identifying their role in the ecosystem. By examining the relationship between makerspaces and venture development, this paper will contribute to the growing body of literature on entrepreneurship and innovation, and provide insights for policymakers on how to create more effective and sustainable spaces for supporting entrepreneurial activity.

The structure of the paper is as follows. The following section provides a summary of the literature on makerspaces, the startup ecosystem, and venture developments. In section 3, we go on to describe the research method. The main findings are outlined in Section 4. The conclusion and discussion are shown in the last section.

2. Literature review

2.1 Makerspace

The maker movement is a cultural and social phenomenon that emerged in the early 2000s, and is characterized by a focus on DIY (do-it-yourself) projects. Maker movement and industry 4.0 are closely related because they both place a strong emphasis on innovation, digital technology, and the decentralization of manufacturing. The movement is also frequently linked to makerspaces, which are community-focused workshops or physical spaces where makers can access tools, materials, and support to work on do-it-yourself projects (Schön et al., 2014). Depending on its purpose and the needs of its community, a makerspace might provide different tools and equipment, but some common tools and equipment that are frequently observed in makerspaces include 3D printers, CNC machines, and laser cutters (Jensen et al., 2016).

Although most makerspaces share some common characteristics, each still has its own distinct purposes and goals. A makerspace is typically a non-profit or for-profit organization. Therefore, the business model of a makerspace should be designed to support this mission and provide sustainable funding for the organization (Jhou & Wu, 2019). Makerspaces may specialize in certain areas or concentrate on specific group of users. For instance, some makerspaces might serve as learning environments that encourage cross-disciplinary cooperation and independent learning (Hynes & Hynes, 2018). Some might simply give hobbyists an opportunity to share their hobby with others who share their interests (Einarsson, 2021).

Makerspaces also have a potential for developing entrepreneurs and venture development. It enables people to take their ideas and transform them into a working prototype. This could be a crucial initial step in beginning a company or a new venture (Van Holm, 2015). Some advanced nations have implemented makerspace as a crucial component of the startup ecosystem to promote the growth of ventures that are driven by innovation (Teddy-Ang & Toh, 2020). Although the benefits of makerspaces in fostering entrepreneurship are well known in western nations, they are increasingly common worldwide, with some nations even treating them as national initiatives (Hui & Gerber, 2017; Fu, 2021).

2.2 Startup ecosystem

Startup ecosystem is a collection of people, organizations, and resources that fosters the development and success of startups in a specific region or sector. It consists of various components including entrepreneurs, investors, mentors, incubators, accelerators, universities, governmental organizations, and service suppliers (Motoyama & Knowlton, 2017; Salamzadeh & Kawamorita Kesim, 2017). Many nations attempt to create a thriving startup ecosystem as tools to boost their economies, inspired by the success story of Silicon Valley. Located in the San Francisco Bay Area, Silicon Valley is one of the most famous and influential startup ecosystems in the world homing to many of the world's largest and most successful technology companies (Pique, Berbegal-Mirabent, & Etzkowitz, 2018).

Similar to many other nations, Thailand's primary significant economic policy is to promote the startup ecosystem (Samran, 2020). Currently, the country's startup ecosystem, which was first recognized in 2012, is still in its infancy. The key milestones were the establishment of the Ministry of Digital Economy and Society (MDES) in 2016 and the Digital Economy Promotion Agency (under MDES) in 2017 to support entrepreneurs (Asian Development Bank, 2022). According to startup ecosystem ranking report, Thailand's startup ecosystem is still far behind its neighboring countries like Singapore & Malaysia (Startup Genome, 2022). Even though big corporations actively influenced the ecosystem, it still has some shortcomings particularly in the areas of growth opportunities, hardware and deep tech startup, and early-stage financing (National Innovation Agency, 2021; Asian Development Bank, 2022).

2.3 Venture development

The process of expanding and scaling a startup business is called venture development. It relates to building a viable business model, generating a product or service, devising a market strategy, obtaining capital, and assembling a team to support the expansion of the firm (Choi & Gray, 2008). Venture development might be risky, especially for businesses that are still in the early stages of growth (Gimenez-Jimenez et al., 2022). These risks are also especially higher for businesses that rely on innovation or technology (Hegeman & Sørheim, 2021).

Generally, venture development consists of several steps. For instance, Carrete & de Faria (2019) indicated that it consists of consecutive phases including research, identification viable product, testing & prototyping, customer portfolio, and first & second expansion of the customer base. In startup literature, venture development process may be defined differently. Based on lean startup principle, for example, venture development process comprises of problem/solution fit, product/market fit, and scale (Maurya, 2022).

3. Research methodology

This study used a qualitative research approach and was exploratory in nature. We conducted an in-depth interview with founders or manager of makerspaces listed in table 1. Overall, our sample consisted of eight makerspaces. Based on content analysis method, we then analyzed business model of each makerspace using business model canvas (BMC). Next, from the obtained business model canvas, themes indicating the influence of makerspace on venture development in startup ecosystem were derived.

Table 1. List of makerspaces in the sample.

Name	Location	Type	Starting Year
Fablab Bangkok	Bangkok	Part of Fablab and KX Knowledge Xchange	2020
KKU Maker Space	Khon Khan	Library makerspace	2018
91 Maker Space	Bangkok	Private for profit	2018
Home of Maker	Bangkok	Private for profit	2019
Chiangmai Maker Club	Chiang Mai	CSR project of private company	2014
Pinn Creative Space	Bangkok	Private for profit	2015
Food Makerspace	Chiang Rai	Part of MFU focus on food	2020
Made Here on Earth	Bangkok	Private for profit	2016

4. Results

4.1 Makerspaces' business model canvas

Each makerspace's business model canvas (BMC) was created as a consequence of the analysis of its business model. The following was the example of BMC of some selected makerspace in the sample. We illustrated how we translated makerspace' business model into its role in fostering venture development and into the particular themes.

Table 2 was the business model canvas of 91 Maker Space. The value proposition of this for-profit makerspace was to link all of its customers, including makers, creators, and angel investors. Its key activities included creating users' community, collecting data of users, providing prototyping equipment, making products, offering training courses, matching job and business deals, and operating marketplace platform for selling makers' products. Based on these information, 91 Maker Space role in venture development covered several areas from, for instance, business matching, product prototyping, to marketing final products. Nothing that 91 Maker Space focused on creating its own startup ecosystem. Therefore, we labelled it as "Ecosystem orchestrator". We performed business model analysis and derived label or theme for each makerspace. In summary, we obtained five themes that emerged from our analysis of how makerspace in our sample influenced venture development.

Table 2. Example of business model canvas of the makerspace in the sample: 91 Maker Space

Key partners: 1. Equipment distributor 2. User that buys equipment 3. Experts/Trainer 4. Course participants	Key activities: 1. Create community of users 2. Collect data of users 3. Provide equipment for prototyping 4. Make product 5. Provide training 6. Business/ Job matching 7. Operate marketplace	Value proposition: Create ecosystem and community for three groups of target customers and grow together	Customer Relationship: 1. Organize meeting 2. Help finding customer	Customer Target: 1. Angel Investor 2. Maker 3. Creator
	Key resources: 1. Personnel 2. Database of user 3. Equipment 4. Online platform		Channels: 1. Physical space 2. Online platform	
Cost structure: 1. Equipment 2. Rent 3. Personal			Revenue streams: 1. Selling food & beverage 2. Training course 3. Sell equipment's 4. Made to order of product	

4.2 Themes of venture developments

The themes that emerged from our analysis of how makerspace in our sample influenced venture development were as follows; ecosystem orchestrator, rapid prototyping supporter, growth enabler, open learning community builder,

and business matchmaker as shown in table 3. It was important to note that certain makerspaces might perform more than one role. For ecosystem orchestrator, its key role in venture development was to create startups-friendly environment. Therefore, it focused on establishing key components for starting and operating a business. Ecosystem orchestrator tended to paid attention on multiple elements and positioned itself as the ecosystem's primary facilitator. Rapid prototyping supporter, on the other hand, focused on traditional role of makerspace. It enabled makers to develop working prototypes and introduced marketable prototypes to relevant ecosystem's venture supporter. We found that this type of makerspace played only a specific role as it was formally a part of a larger startup ecosystem.

For a growth enabler, it contributed valuable role in the Thailand startup ecosystem. As was previously mentioned, the startup ecosystem in Thailand was reportedly having trouble fostering hardware and deep-tech startups. This was due to these types of startups usually offered physical products that required intensive manufacturing and distributing capabilities during the expansion period. This kind of makerspace could fulfill such a role since it was a business that produced electronic-related products and typically have their own manufacturing facilities and robust supply chains management. Even though providing spaces and tools remained its primary services, a growth enabler focused on identifying viable prototypes and subsequently assisting makers in acquiring funding, manufacturing, and distribution of their products.

The next category was an open learning community builder. This kind of makerspace placed a strong emphasis on creating a collaborative learning community. It opened to anyone eager to develop their making skills. While an open learning community builder makerspace might offer a variety of services essential for business development, such as setting up a website for distributing makers' products, its value proposition is more heavily focused on fostering the innovation capacity of its users. Therefore, one of its key activities was to develop a strategy to constantly improve learning environments. For instance, it mandated that makers offer their works as open-source projects or published their works as blog posts. By using this strategy, the community helped makers reduce the time spent learning prototyping and, as a result, shorten overall venture development process. It was worth noting that an open learning community builder in our samples was the makerspace established as a corporate social responsibility initiative.

Table 3. Themes indicating how makerspace influence venture development

Themes	Description
Ecosystem orchestrator	Focus on creating startup on its own ecosystem and facilitating interaction within network of users and key components
Rapid prototyping supporter	Focus on providing equipment and expert for prototyping development and forward to other parties in the same ecosystem
Growth enabler	Focus on finding potential prototypes from makers and then help in finding funding, manufacturing product, distributing product
Open learning community builder	Focus on building collaborative learning community and sharing open-source project. All required equipment and funding are available (CSR project of private firms)
Business matchmaker	Matching makers with business person or researchers with entrepreneurs

Business matchmaker was another notable role for makerspace in venture development. This feature might be unique for a developing nation like Thailand where some makers were just inventors who had no desire to start their own business. Matching patterns that were observed included those between makers and single entrepreneurs and between makers and large corporations.

Comparing with other venture development organizations, makerspaces in the sample were found to have filled several gaps in the Thailand startup ecosystem. As anticipated, the main contribution to the ecosystem was to assist entrepreneurs in lowering the level of resources needed for product testing and prototyping. This was especially the case for entrepreneurs in hardware startup and deep tech sectors, where testing and prototyping of products required a lot of expensive tools and equipment. According to the stages of venture development, while incubators might focus on very early-stage startups and accelerators might concentrate on later-stage ones, some makerspaces might offer supports from the idea to scaling stages. Receiving entire supports within a single organization might speed up the development of startup for makers with potential prototypes. As some makerspaces provided grants for makers or connected them with angel investors, they thus also reduced the funding issues that the majority of early-stage startups faced.

5. Conclusion and discussion

Makerspace played an important role for venture development in Thailand's startup ecosystem. In addition to offering inexpensive prototype and testing facilities, it assisted in bridging gaps in a number of areas in startup ecosystem such as startup funding, product production and distribution, etc. These roles helped the nation's hardware and deep tech startups get off the ground. It was also worth noting that, in Thailand, the private sector played a significant role in the maker movement, much like other forms of venture development firms that are common in the ecosystem.

There might be a number of reasons why these makerspaces concentrate on assisting venture development activities. One reason was that helping makers succeed as entrepreneurs could be a good strategy for their own survival. This was consistent with the reality that in Thailand low- and middle-income households make up the majority of the population. As a result, the majority of makerspaces across the country might find that the membership-based model, regarded as the traditional source of income for ordinary makerspaces, was not the best revenue option. With this argument, we might infer that the makerspaces' businesses in Thailand were just as risky as the makers or entrepreneurs they supported.

Based on these concerns, we suggested that policymakers may consider these following recommendations. First, although some makerspaces attempted to develop their own ecosystem, the majority of the sample's makerspaces continued to rely on other participants in the startup ecosystem to support venture creation. Therefore, one of the main mechanisms behind making these roles sustainable was to make it easier for these makerspaces to connect with other parts of the ecosystem. Second, since the corporate or private sector was interested in building makerspace as a component of the startup ecosystem, another policy advice was to encourage large businesses to develop makerspaces as CSR projects. This might be accomplished by offering certain incentives, such a tax exemption for those firms. These suggestions, in our opinion, could be well-implemented in Thailand and other emerging economies.

There were certain limitations on this study. First, it was still unclear how startups or entrepreneurs benefited from these roles because the study approached the problem from the perspective of a makerspace. Second, the topic of what kinds of support were most crucial for the development of a successful startups was left unanswered by this study. These issues thus would be an intriguing research topic in the future.

Acknowledgment

This work was supported by National Higher Education, Science, Research and Innovation Policy Council, Thaksin University (Research project grant) Fiscal Year 2021"

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Exploratory Factor Analysis of the Impact of Educational Technology on Sustainable Consumption Behavior in a Knowledge-Based Economy

Thitinan Chankoson

Faculty of Business Administration for Society, Srinakharinwirot University, Thailand.

Email: thitinanc@g.swu.ac.th

Abstract: The aim of the research was to explore the influence of educational technology on sustainable consumption behavior in a knowledge-based economy. A questionnaire was used as a research tool for data collection from 400 survey respondents. Cronbach's alpha was also used to evaluate the reliability of the targeted measurement. The statistics applied for data analysis were frequency, percentage, mean, exploratory factor analysis (EFA) with principal component analysis (PCA), and the orthogonal rotation with the varimax rotation technique. The findings show that the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.864, Bartlett's test of sphericity, a Chi-square, was 33039.695, and degrees of freedom (df) were 528. At a statistical significance level of 0.05, all components showed eigenvalues ranging from 1.055 to 19.737 and a total variance of 80.691 percent. When the appropriateness of component weights was considered, the value was greater than 0.60, which was higher than the acceptable criterion.

Keywords: Educational technology, sustainable consumption behavior, knowledge-based economy

Introduction

The COVID-19 epidemic has become a worldwide disaster. According to UNESCO's monitoring (2020), the coronavirus has a major effect on education. Additionally, as of March 30, over 166 countries had implemented closures across the nation, affecting over 1.52 billion pupils and 87% of the worldwide student population. Furthermore, approximately 60.2 million teachers are no longer in the classroom at the school. A number of countries have adopted partial suspensions from school, impacting millions of students or learners (Gong Yuting, 2020). Regarding COVID-19 sweeping the globe, the development of online education operations generates numerous opportunities and challenges. The traditional education method of face-to-face instruction has progressively changed, and the education industry has recognized the significance of online education.

One of the most important aspects of a great education is online learning because it is reasonable, practical, adaptable, repetitive, high-efficiency, low thresholds, abundant in educational materials, and has a widespread user base. This supports the long-term expansion of educational institutions (Aldholay, et.al ,2018). These are the benefits of online education over conventional classrooms. On the other hand, online education has the potential to increase educational options and radically change the character of learning. As the Internet has grown in importance, mobile apps have evolved into useful and user-friendly educational resources. According to Li, et.al., (2021), the corporate online learning industry is expected to grow by \$38 billion between 2020 and 2024. Large edtech companies like Coursera, which has already raised more than \$100 million, will push the entire online education industry. Furthermore, the size of China's online education business surpassed 320 billion yuan in 2019, indicating a 28.1% year-on-year increase. Vocational training and higher education accounted for 74.6%, while K-12 education accounted for 21.3% (Aldholay, et.al ,2018 and Toufaily, et.al., 2018).

From 2015 to 2030, the Sustainable Development Goals (SDGs) will be the main idea for global development practice, changing the Millennium Development Goals (Li, et.al., 2021). Moving toward sustainable growth and addressing issues such as those in the social, economic, and environmental industry sectors are among the 17 goals (Burmeister, et.al., 2012). Sustainable Development Goal 4 (SDG 4 or Global Goal 4) specifically demands for equitable and inclusive high-quality education and continuous learning opportunities for all. People must have access to excellent education in order to achieve sustainable development.

A new economic model called the "knowledge economy" is crucial to the long-term growth of numerous sectors, which plays an essential part in the sustainable development of various industries. A significant number of studies show that the knowledge economy promotes sustainable growth. It is thought by some theorists, for example, Adepoju and Okotoni (2018) pointed out that the relationship between higher education, knowledge economy, and sustainable development in Nigeria, concluding that knowledge economy is an important economic approach to supporting higher education's sustainable growth. Significantly, sustainable consumption is an essential element to promoting sustained development. The study of sustainable consumption behavior is an essential component of sustainable consumption, which can provide a comparable complement to the study of sustainable development.

Based on the information presented above, the COVID-19 pandemic creates opportunities for the rapid growth of the knowledge economy's online education industry. The online education industry benefits greatly from the COVID-19 environment, but it also encounters significant challenges. How to achieve sustainable development of the online education industry against the background of the knowledge economy is an essential issue that must be addressed. Therefore, the researcher is interested in studying the important factors of educational technology on sustainable consumption behavior in the knowledge-based economy.

Research Objective

The purpose of this research was to study the important factors of educational technology on sustainable consumption behavior in the knowledge-based economy

Literature Review

Based on this theory, this study will explore the factors influencing the impact of educational technology on sustainable consumption behavior in the knowledge-based economy. The research studies and literature related to the present research were thoroughly reviewed as follows.

Knowledge-based Economy

The concept of the knowledge economy has been increasing in significance over the years. Intangible assets, including knowledge and information management, are the new fundamental abilities in the knowledge economy. According to representatives of the Organization for Economic Cooperation and Development (OECD, 1996), the knowledge-based economy is described as “economies which are directly based on the production, distribution, and use of knowledge and information.” In addition, the knowledge economy is defined as an economy in which the generation and exploitation of knowledge are at the core of value addition, which includes high-tech industry, information and communications technologies, and highly creative sectors such as media and architecture (Kok, 2010). People who possess, use, and transfer information are essential in the knowledge economy. As a result, people, knowledge, and technology should be integrated and synergized in order to enable greater creation of added value at the organizational, local community, and/or economic levels. Besides, it is thought by some theorists, for example, White et al. (2012) pointed out that knowledge-based economy is based on Open Innovation, Education, Knowledge Management, and Creativity.

Educational technology (EdTech) in the Knowledge-based Economy

Education technology is the process of incorporating technological resources into the classroom in order to create a more engaging, inclusive, and individual learning environment. In addition, tablets, participating online classes, and even machines that can take notes and record lessons for ill students are now common in today’s classrooms, which have developed from the complicated desktop computers of the past. Moreover, digital technologies have progressed from isolated projects to networks of tools and programs which connect people and things throughout the world and assist in addressing of personal and global challenges. Digital innovation has demonstrated the ability to supplement, enhance, and change education, with the potential to accelerate progress toward SDG 4 for education and alter modes that provide common access to learning.

Digital education, also known as technology enhanced learning or e-Learning, is the creative application of digital tools and technologies during instruction and learning. Exploring the use of digital tools allows teachers to create interesting learning possibilities in their classes, which can be combined with or completely online courses and programs. Online education is an instance of “shadow education” related to school education that can recognize and cover gaps in the conventional school education system. Online education is a method of learning and instruction that uses digital sources such as the Internet. Some researcher pointed out that it cannot only overcome traditional education's time and space constraints, but also fully utilize the various convenient conditions provided by the process of Internet technology innovation, resulting in the formation of a new education mode that is separate from traditional face-to-face teaching. Significantly, the education industry is the foundation of the information economy. The online education industry has grown quickly in recent years as a new mode of instruction. In this paper, the online education industry is described as an essential component of the education industry in the knowledge economy.

Sustainable Consumption Behavior (SCB)

The National Economic and Social Development Board (NESDB) defines sustainable consumption behavior is defined as consumption that meets basic needs and improves quality of life while taking into account the ecological system’s carrying capacity, affecting a balance between the happiness of self-sufficiency and sharing with others, and continuously preserving the resource base for future generations' production and consumption activities (Surhone et al., 2010). According to Romero et al. (2020), most meanings encompass environmental consumer behavior and decisions, such as comparing energy use when purchasing electrical or machine products, using recyclable shopping bags, and being prepared to pay more for environmentally friendly products. Additionally, SCB is further classified by Minton et al. (2018) as normative or self-improvement. SCB provides particular attention to consumer behavior.

SCB in traditional economies, such as energy use, is emphasized in research reports (Wang et al., 2014). This study's discussion of sustainable purchasing behavior is about the online education industry in the knowledge economy. This paper discusses consumer attention to lifestyle, education style, and living environment in the online education industry, as well as the beneficial role these play in promoting the sustainable development of the online education industry in the knowledge economy.

Research Methodology

Research design: The present study was designed as a survey and development research which used questionnaires to collect data and to explore the important factors of educational technology on sustainable consumption behavior in the knowledge-based economy.

How to select the research area and data providers: 1) Primary data for 400 participants were derived from the above-mentioned random sample process. Then, the sample of the quantitative study are parents who have consumption behavior in online education industry. In addition, the researcher verified that all returned questionnaires were completed and correct. Questionnaire is used as a research tool to collect primary data. The questionnaire was examined by three experts in order to determine the validity of the content. The Item-Objective Congruency Index (IOC) was used to select 0.5 and above IOC questions (Tirakanun, 2007). 2) Secondary data were obtained from related document or research papers such as books, textbooks, theses, independent studies and academic papers in order to complete this study. Furthermore, this study uses method of online self-reported questionnaire to investigate the users of education industry, which is based on previous research and designed by using Likert scale. The sample size was derived from sample determination using the Taro Yamane calculation formula with a 95 percent confidential level sampling error ($p < 0.05$) and consisted of 400 participants sample size. According to Cronbach (2003), the analysis of reliability and validity showed that alpha coefficient was valued at 0.979 of level validity. The design of the questionnaire adopts Likert's five-rating scale pattern of response, ranging from "very important"/ "very satisfactory", "important"/ "satisfactory", "neutral", "unimportant"/ "dissatisfactory", "lesser importance"/ "lesser satisfaction, and scoring from 5 to 1 as the basis of the ensuring statistical analysis.

Data Analysis: after the data were received, the researcher recorded, checked, and coded the data by using statistical computer software for a social study. The techniques of statistical analysis used in data analysis were frequencies distribution, percentages, mean and standard deviation. The exploratory factor analysis (EFA) method was used to classify, clarify, and explain study factors and the infrastructural structure. An exploratory factor analysis (EFA) using extraction of main components was carried out on the detailed answers from the insight measures.

Research results

Results from the questionnaire: Regarding the basic information of the respondents, it was found that most of them were female (59%), between 31-40 years old (37.8%), held a bachelor degree (43.6%), earned an average monthly income of 30,001-40,000 baht (24.8%), and had worked in the private company (39%).

Analysis of the element factors: Considering the analysis results of the study's variables, the Bartlett's Test of Sphericity was used to examine the overall significance of correlations among variables ($p < .05$) and the Kaiser-Meyer-Olkin Measure of Sampling Adequacy was used to examine the relationship between the 36 factors variables. As shown in Table 1, the results revealed that the examined data were presence of correlation among variable with the significance of Bartlett's Test of Sphericity (Chi-Square=33039.695, $df = 528$, $P\text{-Value} = .000$; < 0.05) and were most adequate for factor analysis with the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) value of .864 (Kaiser & Rice, 1974). Then, the variables were analyzed using the principal component analysis (PCA) and varimax orthogonal rotation techniques.

Table 1 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.864
Bartlett's Test of Sphericity	Approx. Chi-Square	33039.695

	df	528
	Sig.	.000

The results showed that there were 5 components with eigenvalues greater than 1. All components had a range of values of eigenvalue from 1.055 to 19.737 and had cumulative variance of 80.691 percent at a statistical significance level of 0.05 as shown in Table 2. In order to confirm the practical significance of the variable classification, when consider the appropriateness of the weights of components had the value greater than 0.60, which was higher than the acceptable criterion (Hair et al., 2010).

Table 2 Total Variance Explained of research variables

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	19.737	59.809	59.809	19.737	59.809	59.809	7.858	23.812	23.812
2	2.321	7.034	66.843	2.321	7.034	66.843	5.343	16.191	40.003
3	2.146	6.502	73.345	2.146	6.502	73.345	5.167	15.659	55.662
4	1.369	4.149	77.494	1.369	4.149	77.494	4.462	13.521	69.183
5	1.055	3.198	80.691	1.055	3.198	80.691	3.798	11.509	80.691
6	.912	2.763	83.455						
...						
...						
33	.000	.001	100.000						

From Table 2, it was found that 33 variables used in the analysis were able to group into 5 components with the variance of Eigenvalue greater than 1. All elements had the cumulative percentage of variance 80.691 at a statistical significance level of 0.05. Three variables were removed using this method, remaining only 33 factors. The fifth-factor solution cumulatively explained 80.691% of the variance in the data.

Factors analysis found that component 1 (F1), Valuable experience factor consisting of eleven variables, had a factor loading of 0.624–0.771 and explained 23.812 percent of the variance in the data. Component 2 (F2), Environmental factor consists of six variables, with the factor loading between 0.629–0.853 and the variance explained of 16.191 percent. Component 3 (F3), Mindsets for learning factor, consists of seven variables, with a component weight between 0.635–0.775 and a variance explained of 15.659 percent. Component 4 (F4), the Culture of Society factor consists of four variables with factor loading between 0.766–0.882 and a variance explained of 13.521 percent. Component 5 (F5) Participation factor consists of two variables, with the component weight between 0.758–0.760, and the variance explained at 11.509 percent of the variance.

Conclusion

This research can be summarized as, the COVID-19 pandemic creates opportunities for the rapid growth of the knowledge economy's online education industry as well as benefits greatly from the COVID-19 environment, but it

also encounters significant challenges. After considering the result from the techniques of statistical analysis, an exploratory factor analysis (EFA) found that the key factors of educational technology on sustainable consumption behavior in the knowledge-based economy consisted of 5 factors of the following components (i) Valuable experience, (ii) Environmental factor, (iii) Mindsets for learning, (iv) Culture of society, and (v) Participation factor

Acknowledgements

This research was financially supported by a research grant from faculty of business administration for society, Srinakharinwirot university, Grant number: 110/2565. The researcher would like to thank all cited experts that contributed to the present study.

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The Unique Practices Of Workplace Bullying In Academe And Their Prevalence: An Exploratory Study

Ya'arit Bokek-Cohen (Ph.D.)*

Department of Human Resources
The Academic College of Israel in Ramat-Gan
Academic College of Tel Aviv Jaffa
87 Ruttenberg st., Ramat-Gan,
Postal code 5227528
Israel
Email ybokek@gmail.com

Or Shkoler

Department of Management, Business School
HEC Montréal, Montréal, QC, Canada.
POB 833 Montréal, QC, Canada
Email or.shkoler@gmail.com

Eitan Meiri M.A.

Occupational and forensic psychologist
CEO Effective Management Ltd.
12 Ha'nuriot St. Herzelia, Israel
Email eitan@nihul.org

ABSTRACT

Over the past two decades there has been a growing interest in workplace bullying in academe, and studies show that it is on the rise. Workplace bullying against academic faculty, known as 'academic bullying', is a rising phenomenon accelerated by budget issues and various external pressures. Despite this, relatively few researchers have examined how and why it occurs in higher education. The term 'academic bullying' describes the various forms of bullying that may exist in academic institutions, although it is seldom mentioned in the scholarship; it is defined as abusive and disrespectful behavior aimed at impeding the victim's academic promotion or success. The current study sought to explore the unique bullying methods and practices enacted in academe, and to estimate their prevalence. A preliminary study yielded 23 academic bullying methods, which constituted the basis for constructing a study questionnaire; we also included questions about the organizational culture in the institution where each respondent works and Big Five personality traits of respondents. Respondents were also encouraged to describe their specific experiences of being bullied. Participants were 328 faculty members from academic institutions around the state of Israel and of various academic ranks who completed our study questionnaire. The 23 bullying methods were classified into three categories by means of exploratory factor analysis as follows: humiliation; exploitation of status; and obstruction of promotion. Participants were also asked to mark what emotional, cognitive, physical, and medical self-reported consequences they suffer as a result of the bullying.

Findings show that all of the three types of academic bullying are more likely to be experienced by individuals who are more extraverted, conscientious, neurotic and open but less agreeable; also all of these three types are more likely to occur in *Market* and *Hierarchy* organizational cultures and less likely to occur in *Clan* and *Adhocracy* organizational cultures.

We present these disturbing results as well as the self-reported adverse consequences to the victims. Participants working in institutions characterized by a clan organizational culture are less likely to experience academic bullying of all three types. Women report higher levels of humiliation and promotion obstruction as compared to the men. Untenured faculty suffer significantly higher levels of humiliation and exploitation of status than their tenured counterparts. Out of the 23 bullying methods that were included in our questionnaire, the following 12 of them are not included in the international and widely accepted measurement tool for evaluating workplace bullying NAQ-R: Delay in promotion; Delay in approving a sabbatical year; Refusal or unusual delay in approving budget requests for a conference / research (which do not exceed the annual budget); Deliberate lack of consideration for the lecturer's preferences and requests regarding teaching days and hours; Receiving abusive comments from students; The supervisor's demand to add their name to an article / patent that the supervisor did not contribute to writing/creating; A colleague's demand to add their name to an article / patent that the colleague did not contribute to writing/creating; Taking credit for tasks I performed; Discrimination in the allocation and / or location or size of an office; The supervisor's requirement that the lecturer perform a task for them without receiving compensation, such as statistical analyses or substitute teaching; Assignment and appointment to administrative positions without recognition / without monetary or other consideration; Sabotaging the lecturer's work. What is common to 11 of these 12 areas of behavior that are missing from the NAQ-R standardized measures of workplace bullying is the fact that they are performed by the head of the department and/or by the Dean; only one behavior related to a colleague. Also, most of these bullying methods relate to promotion and budget grants which are critical aspects of employment in academic institutions. In most universities, a lecturer is fired if they did not achieve promotion to higher academic rank within a certain period of time, and budget grants are crucial to the ability to conduct research and publish articles.

The contribution of the present study is threefold: first, it demonstrates that the NAQ-R should be used after a careful consideration of the question: Does it include items that are relevant to the profession of the participants and the nature of their daily work? Further investigation is needed to qualify and validate our questionnaire. Second, it provides an important estimate of the prevalence of academic bullying according to the specific bullying methods that are applicable in academe. Third, the study is the first to evaluate the pervasiveness of the self-reported emotional, cognitive, physical, and medical consequences of being a target of academic bullying. We provide sample quotations of answers written by some of the many respondents who shared with us cases of bullying. We discuss these results and provide some practical recommendations to act against academic bullying.

Keywords: academe; Big Five; bullying; micro-aggression; organizational culture.

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Organizational culture in a taxi firm- lesson learned from Israeli case study

Yaffa Moskovich, Professor
Zefat academic college, Israel
Mosko777@gmail.com

Abstract

This paper examined the effect of management attitude on cultural features of a taxi company, basing its analysis on the ice-berg and institutional models to reveal the firm's hidden characteristics. The main object of this research was to report the interaction of management behavior on shaping organizational culture, as reflected in one case study of a taxi company. This research would like to explore how managerial attitudes effected the cultural behavior of the employees (i.e., the drivers and the administrative workers). Moreover, this research illuminates the ability of management to shape organizational culture that can became a threat to organizational sustainability.

This paper examined cultural features of a taxi company, basing its analysis on the iceberg and institutional models to reveal the firm's hidden characteristics. It contributes to organizational culture literature about taxi firms and other companies, focusing on the owners' controlling the organizational culture. The ethnographic research developed along qualitative lines: 18 interviews and 10 direct observations in the organizational setting. The research question was: How did the drivers and owners perceive the reality of their taxi company? The findings portrayed a culture of conflict, driven by the owners' motivation to become rich quickly. They exploited the drivers' inferior status, created a high level of stress, and openly humiliated them. The drivers were deeply dissatisfied, which led to high rates of turnover. This paper presented insights and practical suggestions for managers about how to improve a conflictual climate in a taxi firm in specific, and all firms in general.

Key words: [Driver Turnover; Organizational Culture; Labor Relations; Taxi; Cab]

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ISSN 2167-3179 (ONLINE) USA